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Fifty-third Annual Report

OF THE

Ohio State Board of Agriculture

WITH AN ABSTRACT OF THE
PROCEEDINGS OF

The County Agricultural Societies

For the Year 1898,

TO THE

General Assembly of the State of Ohio.

COLUMBUS, OHIO:
FRED. J. HEER, STATE PRINTER.
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Annual Report
OF THE
Ohio State Board of Agriculture
For the Year 1898.

DEPARTMENT OF AGRICULTURE,
COLUMBUS, March 15, 1899.

To the Honorable, The General Assembly of Ohio:

GENTLEMEN: In compliance with law, The Ohio State Board of Agriculture herewith submits its Fifty-third Annual Report. The report contains the transactions of the Board for 1898, Crop and Live Stock Statistics, Agricultural Statistics gathered by county auditors and reported to the Department, Tables of Comparative Statistics, Bulletin of Entries and Awards of the Forty-eighth Annual Fair, Abstracts of Reports from County Agricultural Societies, Report on Commercial Fertilizers, Proceedings of the Fifty-fourth Annual Meeting of The State Board of Agriculture, Report of Farmers' Institutes, Proceedings of the State Farmers' Institute, Report of the Thirty-seventh Annual Session of the Ohio Wool Growers' Association, papers presented at the Annual Meeting of the Ohio Draft and Coach Horse Breeders' Association, and a brief history of the State Board of Agriculture and Farmers' Institutes.

The work of the Department of Agriculture continues to grow heavier each year, as will be seen by reference to the several reports, and is of inestimable value to the agriculturists of Ohio, a fact which is recognized by all.

The Ohio State Fair Grounds have been enlarged and beautified by the addition of handsome and commodious buildings for the exhibition of live stock, thanks to the wise and generous provision of the seventy-third General Assembly, making them the best, most complete fair grounds in this country, if not in the world.

The Department of Agriculture takes this opportunity to thank the General Assembly and the people of Ohio for the hearty coöperation and ready support extended to it in the performance of its duties.

Respectfully submitted,

W. W. MILLER,
Secretary.

JAS. W. FLEMING,
Assistant Secretary.

553478

OHIO STATE BOARD OF AGRICULTURE

1898

OFFICERS.

C. BORDWELL, *President.*
L. G. ELY, *Vice President.*
J. C. BOWER, *Treasurer.*
W. W. MILLER, *Secretary,* Columbus.
J. W. FLEMING, *Ass't Secretary,* Columbus.

MEMBERS.

A. J. CLARK, Cambridge, Guernsey County	Term expires January, 1899
J. C. BOWER, Columbus, Franklin County	Term expires January, 1899
E. C. ELLIS, Crestvue, Hamilton County	Term expires January, 1899
J. S. STUCKEY, Van Wert, Van Wert County	Term expires January, 1899
C. BORDWELL, Batavia, Clermont County	Term expires January, 1899
ALBERT HALE, Mogadore, Summit County	Term expires January, 1900
S. H. ELLIS, Springboro, Warren County	Term expires January, 1900
L. G. ELY, Fayette, Fulton County	Term expires January, 1901
H. S. GRIMES, Portsmouth, Scioto County	Term expires January, 1901
G. LIGGETT, Watkins, Union County	Term expires January, 1902

EXECUTIVE COMMITTEE.

C. BORDWELL, A. J. CLARK, J. C. BOWER,
G. LIGGETT, H. S. GRIMES.

FARMERS' INSTITUTE COMMITTEE.

L. G. ELY, J. S. STUCKEY, ALBERT HALE.

AUDITING COMMITTEE.

E. C. ELLIS, H. S. GRIMES, S. H. ELLIS.

OHIO STATE BOARD OF AGRICULTURE

1899

OFFICERS.

L. G. ELY, *President.* G. LIGGETT, *Vice President.*
H. S. GRIMES, *Treasurer.*
W. W. MILLER, *Secretary*, Columbus. J. W. FLEMING, *Ass't Secretary*, Columbus.

MEMBERS.

ALBERT HALE, Mogadore, Summit County	Term expires January, 1900
S. H. ELLIS, Waynesville, Warren County	Term expires January, 1900
L. G. ELY, Fayette, Fulton County	Term expires January, 1901
H. S. GRIMES, Portsmouth, Scioto County	Term expires January, 1901
G. LIGGETT, Watkins, Union County	Term expires January, 1902
C. BORDWELL, Batavia, Clermont County	Term expires January, 1902
D. J. GREEN, Renrock, Noble County	Term expires January, 1903
SAM'L TAYLOR, Pleasant Corners, Franklin County	Term expires January, 1903
J. S. STUCKEY, Van Wert, Van Wert County	Term expires January, 1904
B. P. BALDWIN, Tiger, Mahoning County	Term expires January, 1904

EXECUTIVE COMMITTEE.

L. G. ELY, H. S. GRIMES, G. LIGGETT, SAM'L TAYLOR.

FARMERS' INSTITUTE COMMITTEE.

ALBERT HALE, J. S. STUCKEY, C. BORDWELL.

AUDITING COMMITTEE.

S. H. ELLIS, B. P. BALDWIN, D. J. GREEN.

LIST OF MEMBERS OF THE OHIO STATE BOARD OF AGRICULUURE.

FROM 1850 TO 1899.

Name.	Years of service inclusive.	Postoffice.
M. L. Sullivant†	1850–53	Columbus.
S. Medary†	1850–53	Columbus.
M. B. Bateham†	1850–51	Columbus.
D. Lapham†	1850–51	Cincinnati.
F. R. Elliott	1850–51	Cleveland.
J. T. Pugsley	1850–51	Convenience.
Arthur Watts†	1850–52	Chillicothe.
J. M. Edwards	1850–52	Canfield.
C. Springer†	1850–52	Meadow Grove.
J. G. Gest	1850–54	Xenia.
S. Halloway	1850–51	St. Clairsville.
Allen Trimble†	1850–51	Hillsboro.
William Case†	1852–53	Cleveland.
Philo Adams†	1852–53	Huron.
R. W. Musgrave†	1852–57	Sulphur Springs.
R. W. Steele	1853–56	Dayton.
William H. Ladd	1853–56	Richmond.
D. McIntosh	1853–54	Shalersville.
J. T. Worthington†	1853–56	Chillicothe.
Joseph Sullivant†	1854–55	Columbus.
John K. Greene	1854–57	Cincinnati.
James L. Cox	1854–55	Zanesville.
B. Stedman†	1854–57	Cleveland.
Alexander Waddle†	1855–60	South Charleston.
Abel Krum	1855–58	Cherry Valley.
Lucien Buttles†	1856–59	Columbus.
G. W. Baker†	1856–57	Marietta.
John M. Milliken†	1857–62	Hamilton.
Luther Smith	1857–58	West Liberty.
Thomas S. Webb	1857–58	Massillon.
Norton S. Townshend‡ †	1858–63	Avon.
L. Q. Rawson	1858–59	Fremont.
James M. Trimble†	1858–61	Hillsboro.
John Rebert†	1858–61	Lancaster.
D. E. Gardner†	1859–64	Toledo.
William Dewitt	1859–64	Cleveland.
C. W. Potwin	1859–62	Zanesville.
T. C. Jones†	1860–67	Delaware.
Henry B. Perkins	1860–63	Warren.
David Taylor†	1861–66	Columbus.
Jacob Egbert†	1862–63	Lebanon.
Nelson J. Turney†	1862–69	Circleville.
D. McMillan†	1863–70	Xenia.
W. R. Putnam	1863–64	Marietta.
William F. Greer†	1864–67	Painesville.
James Fullington†	1864–69	Irwin Station.

MEMBERS OF THE STATE BOARD OF AGRICULTURE — Continued.

Name.	Years of service inclusive.	Postoffice.
William B. McClung†	1864–71	Troy.
James W. Ross	1865–70	Perrysburg.
R. R. Donnelly†	1865–68	Wooster.
James Buckingham	1865–72	Zanesville.
J. Park Alexander	1867–70	Akron.
Norton S. Townshend‡ †	1868–69	Avon.
William Lang†	1868–71	Tiffin.
D. C. Richmond†	1869–74	Sandusky.
R. P. Cannon	1870–75	Aurora.
James B. Jamison	1870–77	Cadiz.
L. G. Delano†	1870–75	Chillicothe.
L. B. Sprague†	1871–76	Springfield.
Simpson Harmount	1871–76	New Philadelphia.
John A. Warder†	1871–76	Cleves.
W. S. Hickox	1872–73	Mansfield.
B. W. Carlisle†	1872–79	Hooker's Station.
Justus C. Stephens	1873–74	Kenton.
John M. Pugh	1874–79	Columbus.
L. B. Wing	1875–80	Newark.
Russell C. Thompson†	1875–76	Sylvania.
Leo Weltz†	1876–83	Wilmington.
D. L. Pope*	1876–81	Welshfield.
Charles Smith†	1877–80	Marion.
E. T. Stickney†	1877–78	Republic.
A. E. Stone	1877–78	Gallipolis.
Peter Murphy	1877–80	Hughes' Station.
W. N. Cowden	1878–83	Quaker City.
R. Baker	1879–82	Elyria.
Arvine C. Wales†	1879–82	Massillon.
R. H. Haymen	1880–81	Portsmouth.
O. P. Chaney	1880–82	Canal Winchester.
C. D. Bailey	1881–88	Gallipolis.
J. C. Levering	1881–86	Levering.
William S. Foster	1881–88	Urbana.
L. B. Harris†	1882–87	Upper Sandusky.
J. H. Brigham	1882–89	Delta.
L. N. Bonham	1883–86	Oxford.
H. Talcott†	1883–87	Jefferson.
N. A. Sims	1883–85	Columbus.
T. P. Shields	1884–87	Watkins.
John Pow	1884–89	Salem.
S. H. Hurst	1884–89	Chillicothe.
J. J. Sullivan*	1887–88	Millersburg.
Joseph H. Terrell	1887–88	New Vienna.
J. G. Russell	1887–90	Mt. Gilead.
H. G. Tryon†	1888–91	Willoughby.
J. M. Black‖	1888–90	Hanover.
A. H. Kling	1889–96	Marion.
H. S. Grimes	1889–90	Portsmouth.
A. J. Clark	1889–98	Cambridge.
W. W. Miller	1889–94	Castalia.
J. W. Pollock	1890–93	Cedarville.
N. Ohmer	1890–95	Dayton.
L. G. Ely	1890–91	West Unity.
E. L. Hinman	1890–93	Columbus.
J. C. Bower**	1891–98	Athens.
George Lewis	1891–94	Van Wert.
Chester Bordwell	1892–93	Batavia.

MEMBERS OF THE STATE BOARD OF AGRICULTURE — Concluded.

Name.	Years of service inclusive.	Postoffice.
F. A. Derthick	1892–95	Mantua.
J. T. Robinson	1894–97	Rockaway.
G. Liggett	1894	Watkins.
J. H. Pringle	1894–95	Cardington.
E. C. Ellis	1895–98	Crestvue.
Chester Bordwell	1895	Batavia.
L. G. Ely	1896	Fayette.
H. S. Grimes	1896	Portsmouth.
Albert Hale	1896	Mogadore.
J. S. Stuckey	1897	Van Wert.
S. H. Ellis	1898	Waynesville.
D. J. Green	1899	Renrock.
B. P. Baldwin	1899	Tiger.
Samuel Taylor	1899	Pleasant Corners.

† Deceased.
‡ Removed to Columbus.
* Removed to Cleveland.
** Removed to Groveport.
‖ Removed to Dresden.

TABLE SHOWING THE PLACE AND RECEIPTS OF EACH STATE FAIR HELD; ALSO A LIST OF THE OFFICERS FOR EACH YEAR OF FAIR.

Year.	President.	Treasurer.	Secretary.	Place of fair.	Receipts.
1850	M. L. Sullivant*	Samuel Medary*	M. B. Bateham*	Cincinnati	$ 8,036 18
1851	same	same	W. W. Mather*	Columbus	8,204 09
1852	Arthur Watts*	same	same	Cleveland	13,360 00
1853	Samuel Medary*	M. L. Sullivant*	Geo. Sprague	Dayton	13,996 37
1854	R. W. Musgrave*	Joseph Sullivant*	same	Newark	8.824 58
1855	J T. Worthington*	same	same	Columbus	9,745 54
1856	William H. Ladd	Lucien Buttles*	same	Cleveland	16,684 20
1857	Alexander Waddle*	same	John H. Klippart*	Cincinnati	17,530 75
1858	John M. Millikin*	same	same	Sandusky	9,997 70
1859	N. S. Townshend*	same	same	Zanesville	8,958 82
1860	Alexander Waddle*	Charles W. Potwin	same	Dayton	11,998 50
1861	Darwin E. Gardner*	same	same	"	8,036 18
1862	Thomas C. Jones*	David Taylor*	same	Cleveland	11,260 64
1863	N. S. Townshend*	same	same	"	11,142 00
1864	Nelson J. Turney*	same	same	Columbus	12,620 54
1865	same	same	same	"	10,658 65
1866	William B. McClung*	same	same	Dayton	14,035 80
1867	Daniel McMillan*	James Buckingham	same	"	18,692 98
1868	James Fullington*	same	same	Toledo	15 606 25
1869	same	same	same	"	19,606 50
1870	James W. Ross	J. Park Alexander	same	Springfield	18,252 85
1871	William Lang*	James Buckingham	same	"	16,460 25
1872	James Buckingham	Simpson Harmount	same	Mansfield	19,149 45
1873	Lincoln G. Delano*	same	same	"	22,517 50
1874	same	same	same	Columbus	27,674 79
1875	R. P. Cannon	same	same	"	20,539 30
1876	S. Harmount	J. M. Pugh	same	"	11,909 61
1877	J. B. Jamison	same	same	"	21,151 21
1878	J. M. Pugh	L. B. Wing	same	"	11,979 50
1879	B. W. Carlisle*	same	J. W. Fleming	"	30,703 35
1880	L. B. Wing	D. L. Pope	W. I. Chamberlain	"	23,682 20
1881	D. L. Pope	Leo Weltz*	same	"	29,706 16
1882	R. Baker	W. N. Cowden	same	"	34,082 52
1883	W. N. Cowden	L. B Harris*	same	"	38,513 78
1884	W. S. Foster	same	same	"	33,306 48
1885	C. D. Bailey.	J. C. Levering	same	"	29,796 51
1886	L. N. Bonham	L. B. Harris*	same	"	30,533 17
1887	J. H. Brigham	same	L. N. Bonham	"	30,902 10
1888	John Pow	J. G. Russell	same	Centennial year, no fair.	....
1889	same	same	same	Columbus	19,637 41
1890	J. G. Russell	A. H. Kling	same	"	27,574 55
1891	J. M. Black	same	same	"	33,878 64
1892	A. H. Kling	W. W. Miller	same	"	30,357 19
1893	J. W. Pollock	same	same	"	19,350 93
1894	W. W. Miller	F. A. Derthick	same	"	27,260 25
1895	A. J. Clark	same	W. W. Miller	"	33,966 13
1896	J. C. Bower	A. J. Clark	same	"	22,531 20
1897	J. T. Robinson	J. C. Bower	same	"	30,369 48
1898	C. Bordwell	same	same	"	31,023 36
1899	L. G. Ely	H. S. Grimes	same	"	....

*Deceased.

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Fifty-third Annual Report

OF THE

Ohio State Board of Agriculture

WITH AN ABSTRACT OF THE
PROCEEDINGS OF

The County Agricultural Societies.

TRANSACTIONS

OF THE

Ohio State Board of Agriculture,

FOR THE YEAR 1898.

DEPARTMENT OF AGRICULTURE.
COLUMBUS, O., January 13, 1898.
9:30 o'clock, P. M.

The following gentlemen comprising the Ohio State Board of Agriculture for 1898, met for organization:

HOLD OVER MEMBERS:

C. Bordwell,	Batavia, Clermont county, O.
A. J. Clark,	Cambridge, Guernsey county, O.
J . C. Bower,	Columbus, Franklin county, O.
E. C. Ellis,	Crestvue, Hamilton county, O.

NEWLY ELECTED MEMBERS:

G. Liggett,	Watkins, Union county, O.	Term of four years.
L. G. Ely,	Fayette, Fulton county, O.	Term of three years.
H. S. Grimes,	Portsmouth, Scioto county, O.	Term of three years.
Albert Hale,	Mogadore, Summit county, O.	Term of two years.
S. H. Ellis,	Springboro, Warren county, O.	Term of two years.

The gentlemen were qualified by taking the oath of office, administered by J. W. Fleming, notary public.

Mr. S. H. Ellis was chosen as temporary chairman and, upon assuming the chair, announced that the business in order would be the election of a President for the ensuing term. Mr. C. Bordwell was placed in nomination, and, there being no further nominations, the Secretary was instructed to cast the vote of the Board for Mr. Bordwell, whereupon he was declared unanimously elected.

For Vice President, Mr. Stuckey nominated Mr. L. G. Ely and, there being no further nominations, a motion by Mr. Grimes prevailed that the Secretary cast the vote of the Board for Mr. Ely, and he was declared unanimously elected.

For Treasurer, Mr. Liggett nominated Mr. H. S. Grimes who declined the nomination and presented the name of J. C. Bower for the office. Mr. Bower was the unanimous choice of the Board and declared elected upon the casting of the ballot.

Mr. Robinson, the retiring member and President of the Board, took occasion to express his appreciation for the warm friendship that existed between himself and the individual members of the Board, and wished to return thanks for the hearty support that had been accorded him in the administration of his duties as President during his term as such.

Mr. Grimes in speaking for himself, also voiced the sentiments of the Board in expressing kindly feelings of friendship for the retiring member, Mr. Robinson, and appreciation of his earnest work as a member and President of the Board, in furthering the interests of agriculture. Most favorable expressions of appreciation were also made by Secretary Miller, the newly elected member, Mr. S. H. Ellis, and by other members of the Board.

The President announced as the next business in order the election of a Secretary. The name of W. W. Miller was presented and, there being no further nominations, the Assistant Secretary was instructed to cast the vote of the Board for Mr. Miller, whereupon he was declared unanimously elected as Secretary of the Board.

On accepting the office, Mr. Miller expressed thanks for the confidence imposed and the honor conferred upon him and hoped the best service he might be able to render would tend to success in all his work for the Board.

Mr. S. H. Ellis submitted the following resolution, which was adopted:

> *Resolved*, That agreeable to the resolution adopted by the State Agricultural Convention, in session today, providing for the appointment by this Board of a committee on resolutions, it is hereby agreed that the Hon. J. L. Carpenter of Meigs county be appointed as chairman of such committee and the other members thereof be appointed at a future meeting of this Board.

The dates recommended by the American Association of Fairs and Expositions, for the Ohio State Fair of 1898, viz. August 29, 30, 31 and September 1 and 2, were ratified.

President Bordwell announced the following committees and assignment of departments:

EXECUTIVE COMMITTEE.

C. BORDWELL, Chairman, in compliance with rules.
J. L. STUCKEY,
A. J. CLARK,
G. LIGGETT.
J. C BOWER.

FARMERS' INSTITUTE COMMITTEE.

L. G. ELY, Chairman,
ALBERT HALE,
J. S. STUCKEY.

AUDITING COMMITTEE.

E. C. ELLIS, Chairman, H. S. GRIMES,
S. H. ELLIS.

DEPARTMENTS IN CHARGE.

First Department—Horses	A. J. Clark.
Second Department—Cattle	L. G. Ely.
Third Department—Sheep	G. Liggett.
Fourth and Fifth Departments—Swine and Poultry	J. S. Stuckey.
Sixth and Seventh—Farm Products, Fruits and Flowers	S. H. Ellis.
Eighth Department—Machinery and Implements	Albert Hale.
Ninth and Eleventh—Manufacturers' Products and Merchandise	S. H. Ellis.
Tenth and Twelfth—Woman's Work and Fine Arts	H. S. Grimes.

On motion of Mr. Grimes, it was agreed that when an adjournment is taken, it be to Thursday, February 24, unless sooner called by the President.

Adjourned.

DEPARTMENT OF AGRICULTURE,
COLUMBUS, FEBRUARY 24.
10 o'clock A. M.

The Board met pursuant to adjournment, President Bordwell in the chair. Members all present except Mr. S. H. Ellis and Mr. Albert Hale. The Secretary read the minutes of the preceding meeting which were approved.

The Secretary presented the following legal opinion, which was directed to be placed on file.

OFFICE OF THE ATTORNEY GENERAL, STATE OF OHIO.

COLUMBUS, FEBRUARY 1, 1898

HON. W. W. MILLER, Secretary, State Board of Agriculture, Columbus, Ohio.

DEAR SIR: I have the honor to receive a communication from you containing the following information and proposition:

"A bill is now pending in the General Assembly to amend section 1523 of the revised statutes of Ohio, providing that agricultural statistics collected by the township assessors and reported to the county auditors, shall be returned by the county auditors to the Secretary of Agriculture, and by him published in monthly crop and stock bulletins, and the annual report of the Ohio Department of Agriculture, instead of having returns made to the State Auditor as now provided by said section 1523 R. S. In discussing the merits of the proposed legislation in the House of Representatives, the question of the legal status of the Department of Agriculture as related to the state government, has been raised, and the suggestion made that this Department is not a legal Department of the state government under the laws of the state.

I beg to submit the proposition to you, as the attorney general of the state, and "the legal adviser of the board," whether the Department of Agriculture is or is not a recognized Department of the state government, and to respectfully ask you for a written opinion as to the same."

Section 22*a* passed April 7, 1882, requires the president of your board to furnish an itemized statement, as well as a detailed statement, for all requisitions from his Department upon the Auditor of State for warrants upon the Auditor of State, the same as the heads of all other departments of state. Annual appropriations are made from the public treasury to support your Department. Section 177 requires the Auditor of State to prepare and furnish the Secretary of the State Board of Agriculture certain official data to be published in your annual report. Section 4446*i* that all suits for the recovery of fines shall be brought by the Secretary of the Board of Agriculture in the name of the State of Ohio. Section 4446*h* empowers you to select certain packages and samples of commercial fertilizer; in fact it gives you full power to act for the state controlling the whole subject of fertilizers. Sections 3692 and 3693–7 recognize your Board, of which you are a creature, as one of the boards of the state. Section 341 requires you to make official reports to be published by the state.

The act passed April 26, 1890, and amended April 27, 1896, places the subject of Farmers' Institutes and their holdings, under your direction and control. Another section expressly provides that the Attorney General shall be the legal adviser of the Board.

Hence it is my opinion that the Department of Agriculture as now organized, governed and controlled by the various statutes above cited, and expenses defrayed by the annual appropriations of the legislature, and the many powers vested in your Board and in the Secretary, is a clearly recognized Department of the state government; as much so as the Dairy and Food Department, or Board of Public Works, Medical Board, or any other board of special functions now performing important duties at the State's expense.

Respectfully submitted,

F. S. MONNETT,
Attorney General.

The Secretary reported the passage of a bill by the General Assembly, requiring the agricultural statistics, as gathered by township assessors, to be returned by county auditors to this Department, instead of to the State Auditor as provided in the old law. The Secretary also reported as pending, a bill to amend the fertilizer law, which bill was to be considered by the Senate Committee on Agriculture at 12 o'clock this day.

The Secretary reported the appropriations made to the Department in the partial appropriations bill and the passage of an act to pay the total bonded indebtedness of the Board.

The matter of fair ground improvements being under discussion, the Secretary urged the necessity of acquiring for the State, additional land to square out the fair grounds and afford desirable space upon which to erect live stock buildings, which were very greatly needed, as the old buildings were going to decay, and were not of a kind suited to the exhibition of live stock, or as good as Ohio should provide for her great live stock interests as represented at the annual State Fairs. Attention was directed to other important improvements and repairs that were needed on the grounds, all of which would require an outlay of money which the Board could not secure except by bonding the grounds, and authority for doing this should be requested from the General Assembly. In anticipation of some favorable action by the Board, an option has been secured on about twenty-five acres of land which could be closed any time up to May 1.

After a very free discussion of the matter, Mr. Clark submitted the following which was adopted:

> *Resolved,* That the Secretary be and he is hereby instructed to petition the present General Assembly for authority to mortgage the State Fair grounds and issue bonds in the sum of eighty thousand dollars, for the purpose of raising money to acquire necessary additional land and make needed improvements.

At 12 o'clock the Board recessed to meet with the Agricultural Committee of the Senate.

At 2:30 o'clock the President again called the meeting to order and miscellaneous business was proceeded with.

On motion of Mr. Grimes, amended by Mr. Stuckey, the rules of the Board were amended, so as to make the annual compensation to the Treasurer fifty dollars.

The Secretary made a statement in which he explained certain features of the fertilizer work and the annoyance he was subjected to by reason of the publication of commercial values. Manufacturers claim that the fertilizer inspection and analysis as conducted by the Secretary under the law of the state, is entirely satisfactory, but ask that values be omitted in the reports. The Secretary requested the Board to advise him as to the manner in which he should meet these objections, that he was willing to stand firmly for whatever the Board deemed for the best interest of all concerned.

On motion of Mr. Grimes, it was expressed as the sense of the Board that the Secretary meet the fertilizer manufacturers and adjust as his judgment may direct, the matters in question, that the Board will approve any action taken by the Secretary.

On motion of Mr. Bower, the appointment of a Chief of Fair Police was deferred until a future meeting.

A new system of admissions was presented by the Secretaries for the consideration of the Board. After a thorough discussion of the matter, the system, as presented, was adopted and tickets ordered to be provided in accordance therewith.

Miscellaneous business being completed, the Board proceeded to the work of revising and adopting a premium list for the coming State Fair, continuing until 7 o'clock P. M. when, on motion, it was agreed to adjourn to meet at the call of the President.

DEPARTMENT OF AGRICULTURE,
COLUMBUS, April 20, 1898.
10 o'clock, A. M.

The Board met pursuant to call, President Bordwell in the chair. On roll call all members were found to be present, except Mr. Hale.

The minutes of the preceding meeting were read and approved.

In reference to the publication of fertilizer reports discussed at the last meeting and left to the discretion of the Secretary to include valuations. he reported that no further efforts had been made by the fertilizer men to induce the omission of valuations from the reports.

On motion of Mr. Grimes, it was agreed that Captain Alexis Keeler be appointed as Chief of State Fair Police for the ensuing fair, compensation to be the same as allowed last year.

The Secretary reported the passage of a bill by the General Assembly, introduced by Senator T. E. Cromley, which authorizes the Board to mortgage the fair grounds and issue bonds for the purpose of raising money with which to acquire additional land, erect buildings and make other improvements, and that it would be necessary for the Board to take action, instructing its officers in the matter.

Mr. Ely presented the following which were unanimously adopted:

WHEREAS, The General Assembly of Ohio by act of April 12, 1898, authorized this Board to issue bonds in the sum of eighty thousand dollars ($80,000) for the purpose of securing money with which to purchase additional land for state fair purposes, erecting new buildings and improving the grounds and buildings, and

WHEREAS, Said act directs that the payment of bonds be secured by a mortgage on the Board's real estate with the improvements thereon, therefore,

Resolved, That the President and Secretary of the State Board of Agriculture are hereby authorized and directed to prepare and execute a mortgage for the Board, on the State Fair grounds and all buildings and improvements thereon, to Mr. William P. Little, of Columbus, Ohio, as Trustee for the bondholders; and the President and Secretary of the Board are hereby further authorized and directed to cause to be issued, and execute for and in the name of the Board, eight hundred (800) coupon bonds of the denomination of One Hundred Dollars ($100), aggregating Eighty Thousand Dollars ($80,000), with interest at the rate of five (5) per centum per annum, payable semi-annually on the first day of March and the first day of September, each year, in accordance with the provisions of said act of the General Assembly, passed April 12, 1898. All these bonds shall bear date of May 1, 1898, and shall be made payable as follows: Eight thousand Dollars ($8,000)—eighty bonds—payable September 1, 1902, and Eight Thousand Dollars ($8,000)—eighty bonds—payable annually thereafter until September 1, 1911, when the last Eight Thousand Dollars ($8,000)—eighty bonds—shall become due and payable.

On motion of Mr. Grimes, the Secretary was directed to prepare for execution $80,000 of mortgage bonds and invite proposals for the sale of $40,000 of said amount at an early date and he is hereby authorized to make sale of such amount to the best advantage.

On motion of Mr. Ely, the President and Secretary were authorized and directed to execute a note of the Board and borrow money to consummate the purchase of land upon an option which has been secured, good until May 1, 1898, provided it becomes necessary before money from the sale of bonds can be placed to the Board's credit.

On motion of Mr. Clark, Mr. H. A. Linthwaite was, upon proper recommendation and endorsement as to ability and honesty, appointed as acting and consulting architect for the Board, to continue at the pleasure of the Board and receive as compensation for drawings, plans and specifications and such general service and information as may be required and necessary, an amount equal to 2½ per cent of the cost of buildings actually constructed under his plans.

On motion a recess was taken to visit the fair grounds.

At 3:30 o'clock the Board returned from the fair grounds and again went into session. Mr. Hale, the absent member at roll call, was present at the afternoon session.

In connection with the improvements to be made and buildings to be erected, Mr. Ely suggested the necessity of a building committee and moved that President Bordwell and Messrs. Grimes, Liggett and Bower, constitute such committee.

Mr. Stuckey moved to amend by adding Mr. Ely. The amendment prevailed, when the original motion, as amended, was agreed to.

On motion of Mr. Ely, the Secretaries were instructed and empowered to close up the land option with Mr. Innis, and secure to the Board a proper abstract and title to the property.

On motion of Mr. Clark, it was agreed that the Building Committee be empowered to act in building and improvement matters, brought to its consideration and that are necessary to be acted upon.

Mr. Ely moved, that the Secretaries be instructed to procure plans and estimates of cost for construction of horse, cattle, sheep and swine buildings, of such style and proportions as they may deem best to accommodate the exhibits of such live stock at the annual State Fairs, and to afford the best means of examination by the general public, and that they also prepare for consideration plans for other improvements necessary to be made upon the grounds.

The motion by Mr. Ely being supported, was agreed to.

Recess until 8:30 P. M. at which hour the Board again convened.

The Secretary presented a communication relative to an exhibition of models of machinery and other patent devices. Referred back to the Secretary with instructions to investigate.

On motion of Mr. Clark, it was agreed that the sum of $4,500 be allowed for advertising the State Fair of 1898.

On motion the Board adjourned to meet at the call of the President.

April 21, 1898.

The Building Committee met to consider and agreed upon the following:

1st. Drainage and tiling new land.
2nd. Plan of new land.
3rd. Plans for buildings to be located on the new grounds.
4th. Landscape plans.
5th. Paint old buildings that are not to be removed or remodeled.

It was agreed that cattle stalls be 6x6 and 6x5, alternating; sections 28 feet wide for two rows of stalls and aisle; stalls about 4 feet high; 500 in number.

200 sheep pens with portable partitions; aisles 10 or 12 feet wide.

200 swine pens, portable partitions; 10 or 12 feet aisles.

DEPARTMENT OF AGRICULTURE,
COLUMBUS, O., MAY 10, 1898.
10 o'clock A. M.

The Building and Improvement Committee met with all members present.

A consultation was had with the architect, Mr. Linthwaite, relative to proposed plans for live stock buildings, after which the Committee visited the grounds. On return from the grounds the Committee again convened in the Department of Agriculture, when, after further discussion of building plans, Mr. Grimes moved that the general plans as submitted by the architect, for cattle, sheep and swine buildings, be adopted with modifications making reduction in size, as suggested by the Committee, and that the Secretary be directed to invite proposals for the construction of the buildings, according to modified plans, such proposals to be opened on June 14, at 10 o'clock A. M., the Committee reserving the right to reject any or all bids. Proposals to be made on each separate building and be submitted to include painting and without painting. On a yea and nay vote the motion was unanimously agreed to.

On motion of Mr. Ely, the Secretary was authorized and directed to negotiate the sale of the Board's bonds, authorized by act of the General Assembly, on the best terms and in the best manner possible, according to his judgment.

It was agreed as necessary to repair the roof or re-roof machinery building, and the matter was, on motion, referred to the Secretary with power to act.

The Committee adjourned to meet on June 14, at 9 o'clock A. M., unless sooner called by the Secretary.

DEPARTMENT OF AGRICULTURE,
COLUMBUS, JUNE 14, 1898,
10 o'clock A. M.

The Board met pursuant to call, President Bordwell in the chair. On roll call all members were found to be present. The minutes of the preceding meeting of the Board and meeting of the Building Committee, were read and approved.

The Secretary reported that under the Board's instructions to invite proposals for buildings, the following was sent to builders and contractors:

COLUMBUS, OHIO, MAY 23, 1898.

DEAR SIR: Proposals will be received at the Department of Agriculture, in the State House, Columbus, Ohio, until 10 o'clock A. M., Tuesday, June 14, for the material and construction of three large, live stock exposition buildings on the Ohio State Fair Grounds, at Columbus.

Proposals are to be made on each separate building, and be submitted to include painting and without painting. The buildings are of considerable magnitude and worthy consideration by parties competent to handle large contracts.

Plans and specifications can be seen at the office of H. A. Linthwaite, architect, No. 20 North High St., Columbus, Ohio, on and after Thursday, May 26.

The right is reserved to reject any or all proposals or to award the contract to other than the lowest bidder. Proposals must be accompanied by a certified check in the sum of five hundred dollars ($500), as a guarantee that the bidder will enter into contract, if his proposal is accepted.

Proposals to be addressed to W. W. MILLER,
Sec'y State Board of Agriculture,
Columbus, Ohio.

The Board then proceeded to open, in the presence of the bidders, the proposals that had been submitted.

The Board recessed and re-convened at 2 o'clock P. M.

On motion of Mr. Grimes, it was agreed as the sense of the Board that the three buildings proposed for be erected during the current year.

On motion of Mr. Ely, it was agreed that the bids of Mr. C. W. Gest, of Batavia, Ohio, for the construction of the sheep and swine buildings be accepted at his proposal of $9,800 for the former, and $10,200 for the latter, and the Secretary instructed to secure contract.

On motion of Mr. Liggett, the bid of Mr. F. P. Wolfe for the construction of the cattle building was accepted at his figures, $24,100, and the Secretary instructed to secure a proper contract.

On motion of Mr. Grimes, it was directed that the contractors be required to give bonds, Mr. Wolfe in the sum of $12,000, and Mr. Gest in the sum of $10,000, for the proper fulfillment of their respective contracts, and that the work be completed on or before November 1st, 1898.

On motion, the Board proceeded to the appointment of awarding judges for the ensuing State Fair.

Mr. Clark, the member in charge of the horse department, submitted the following list for judges in his department, which was approved and the appointments agreed to.

James Corwin, Waverly, O.	Books 1 and 11.
Wm. Wilkin, Londonderry, O	Books 2 and 3.
Chas. Woodward, Perintown, O	Books 4, 5, 6. 7 and 14.
T. A. Johnston, Antrim, O.	Books 8, 9, 10 and 12.
Henry Taylor, Columbus, O	Book 13.
To be reported later	Books 15, 16 and 17.

SPEED CLASSES.

C. H. Ganson, Urbana, O.	Starter.
C. L. McCulley, Columbus, O	Judge.
Wm. Wilkin, Londonderry, O.	Judge.
James Corwin, Waverly, O	Judge.
Chas. Olmsted, Columbus, O	Timer.
G. W. Graves, Cambridge, O	Timer.
Albert Pickering, Columbus, O	Patrol Judge.

The appointment of cattle judges was referred to the member in charge, to report later.

The appointment of sheep judges was referred to the member in charge.

Mr. Stuckey, the member in charge of swine and poultry, suggested the following judges, and their appointment was ratified.

SWINE.

W. B. Wallace	Oxford, O.
W. R. Harvey	Sibley, Ill.

POULTRY.

S. B. Lane	Spiceland, Ind.
W. B. Hathaway	Madison, Lake Co., O.

The appointment of judges in the farm product, fruit and floral departments was referred to the member in charge, Mr. S. H. Ellis.

The appointment of judges in the woman's department was referred to the member in charge, Mr. Grimes.

The Secretary reported the progress of work on the State Fair grounds and the efforts that had been made toward placing the bonds of the Board to the best possible advantage.

Mr. Grimes submitted the following which was adopted.

It is hereby resolved, By the State Board of Agriculture that W. W. Miller, its Secretary, is hereby delegated with full power to sell the eighty thousand dollar ($80,000) issue of Ohio State Agricultural bonds of date of May 1st, as in his discretion may be to the best interests of the Board and at such time and place as in his judgment will be satisfactory.

It is further resolved, That we direct and authorize C. Bordwell, President, and W. W. Miller, Secretary, to borrow such money as may be needed and authorize them to execute the note of the Board for such amount as may be needed for the contemplated improvements and for use pending the sale of above bonds.

On motion of Mr. Stuckey, it was agreed that the pay of Judges be the same per diem as last year, viz., five dollars per day for time engaged in judging, to which is added railway transportation.

On motion of Mr. Bower, it was agreed that compensation to ticket sellers and ticket takers be three dollars per day each.

On motion of Mr. Grimes, it was directed that private buildings on the grounds, the owners of which do not comply with the rules and requirements of the Board, be taken possession of and repaired for such use as the Board may direct.

On motion of Mr. Bower, the President appointed Messrs. Bower, E. C. Ellis, Stuckey and Ely, a committee to draft resolutions on the death of Mr. Samuel Pentland.

The committee presented the following which was adopted unanimously and ordered spread upon the records and a copy forwarded to the family of the deceased.

WHEREAS, We learn with deep regret of the sudden death of Mr. Samuel Pentland, the proprietor of the Neil House, the hostelry that has for many years been headquarters for the members of this Board, and

WHEREAS, Mr. Pentland, by his genial and social qualities and his unceasing attention to the comfort of his guests, had endeared himself to the members of this Board, therefore,

Resolved, That in the death of Mr. Pentland we lose a valuable friend and most social and agreeable gentleman and business man; his family, a loving and devoted husband and father, and the business interests of Columbus, a representative, pushing business man.

Adjourned to meet at the call of the President.

DEPARTMENT OF AGRICULTURE,
COLUMBUS, O., TUESDAY, JUNE 21, 1898.
10 o'clock A. M.

The Board met pursuant to call. Members all present, except Mr. Grimes and Mr. Hale.

President Bordwell called the meeting to order, when the minutes of the preceding meeting were read and approved.

The Secretary stated, in explanation of a meeting of the Board being called at this time, that it was necessary because of the fact that Mr. C. W. Gest, whose bid for the construction of the sheep and swine buildings had been accepted at the meeting of the Board, June 24, had declined to enter into contract.

President Bordwell explained further the reasons why Mr. Gest had failed to qualify and suggested the necessity for reconsideration of proposals for the buildings named. The Secretary read the next two lowest bids that had been received for the sheep and swine buildings, whereupon he was directed to invite these bidders to submit, in writing, new propositions for the construction, complete, of the two buildings, sheep and swine.

Mr. F. P. Wolfe proposed $24,700 and Ewers Bros. and Young, $25,450. Pending consideration of the proposals, a recess was taken.

At 1:30 P. M. the Board re-convened.

The Secretary reported that he had taken an engineer to the grounds and staked off locations which seemed to him most desirable for the buildings to be erected upon, showing the same in a drawing and explaining the grades necessary to the locations.

On motion of Mr. Clark, the locations and grades as submitted by the Secretary were approved and he was directed to proceed accordingly.

Mr. Ely stated that in view of the fact that one of the original successful bidders had failed to contract and that a reletting would have to be at a higher figure than originally estimated, it might be wisdom for the Board not to create any indebtedness at this time beyond the amount to be anticipated from sale of the bonds authorized, and he therefore moved that the vote at a former meeting, expressing it as the sense of the Board that three buildings be erected during the current year, be reconsidered. The motion to reconsider was agreed to. Mr. Ely then moved to amend by agreeing to the erection of two buildings, and remodeling of old buildings for a poultry department. The amendment, being supported, was agreed to, when the original motion as amended prevailed.

The Secretary was instructed to invite Mr. Wolfe to submit his lowest proposition for the construction of the swine building complete. The figures submitted were $12,800 which were accepted and the Secretary directed to close contract.

On motion of Mr. Bower, the contractor was required to give bond in the sum of $7,000.

On motion of Mr. Clark, the matter of providing feed on the fair grounds and the purchasing and distribution of straw were referred to the Secretaries to arrange.

On motion, the Board adjourned to meet at the call of the President.

DEPARTMENT OF AGRICULTURE,
COLUMBUS, AUGUST 26, 1898.
8 o'clock P. M.

The Board met pursuant to call, President Bordwell in the chair. On roll call all members were found to be present, except Messrs. Clark and Stuckey. The minutes of the preceding meeting were read and approved.

The Secretary reported the action of the Carpenters' Union of Columbus, with reference to the construction of buildings on the State Fair grounds, as taken through the Trades Council and Trades Assembly, stating that said bodies had taken a position entirely unwarranted and not in accordance with the expressions of satisfaction given the Board by a committee representing the Carpenters' Union, who waited upon the Board prior to the awarding of contracts.

The Secretary reported that Governor Bushnell and party and Colonel Haskell and party had been specially invited to attend the fair and that they had accepted the invitation; and he suggested the appointment of committees to receive them, whereupon motions were made and carried to that effect; and the Board appointed as a committee to receive the Governor, President Bordwell and Messrs. Grimes and Ely; and as a committee to receive Colonel Haskell, Messrs. S. H. Ellis, E. C. Ellis and Albert Hale.

The Assistant Secretary was called upon to explain the admission tickets and orders prepared for use and to explain their purpose, which he did.

On motion of Mr. Grimes, it was agreed and directed that members' badges be recognized at all entrance gates not operated by turnstiles.

On motion, it was agreed that admission to the grounds on Monday, August 29, be free, but that a charge be made to the grandstand to witness the bicycle races.

On motion the Board adjourned.

DEPARTMENT OF AGRICULTURE,
COLUMBUS, October 5, 1898.
10 o'clock A. M.

The Board met pursuant to call, President Bordwell in the Chair. Members all present, except Mr. Hale who could not be present because of the holding of the Summit county fair, of which he is the Secretary.

The minutes of the two preceding meetings were read and approved.

The committee appointed at a former meeting to report upon the communications from the Columbus Trades' Assembly, relating to labor on the building contracts at the State Fair grounds, found upon examining the case that the facts did not at all warrant the claims of said Assembly, and further recommended that the action of the officers of State Board with regard to all the matters in question be fully approved and endorsed.

On motion of Mr. Liggett, the report of the committee was unanimously adopted.

The Secretary presented a statement, showing the number of complimentaries and orders for admission issued and honored at the last fair.

The Committee on Farmers' Institutes submitted the following report:

COLUMBUS, OHIO, October 4th, 1898.

To the President and Members of the Ohio State Board of Agriculture, Columbus, Ohio:

GENTLEMEN — We, the undersigned Farmers' Institute Committee, met at the Department of Agriculture today in response to a call by your Secretary, W. W. Miller, and made a careful examination of all petitions and requests from the various farmers' institute societies of the state for the establishment of institutes to be held under the auspices of the State Board of Agriculture during the coming institute season of 1898–'99. After considering all papers, petitions and records on file with the Secretary, we are unanimously agreed to recommend that farmers' institutes, to be held under the management of the Board, be established at the places indicated below, making two hundred and fifty (250) regular institutes to be held during the season, specific dates to be fixed by Secretary Miller:

TOWN.	COUNTY.
Cherryfork	Adams
Peebles	Adams
Spencerville	Allen
Beaverdam	Allen
Harrod	Allen
Bluffton	Allen
Loudonville	Ashland
Savannah	Ashland
Geneva	Ashtabula
Andover	Ashtabula
Ashtabula	Ashtabula
Coolville	Athens
Amesville	Athens
Athens	Athens
Lee	Athens
Kossuth	Auglaize
Cridersville	Auglaize
Uniopolis	Auglaize
Barnesville	Belmont
Colerain	Belmont
Belmont	Belmont
Hamersville	Brown
Union Plains	Brown
Decatur	Brown
Collinsville	Butler
Monroe	Butler
Oxford	Butler
Reily	Butler
Carrollton	Carroll
Westville	Champaign
North Lewisburg	Champaign
Mechanicsburg	Champaign
South Charleston	Clark
Vienna Crossroads	Clark
Tremont City	Clark
Pitchin	Clark
Mulberry	Clermont
Bethel	Clermont
Amelia	Clermont
Williamsburg	Clermont
Sabina	Clinton
Wilmington	Clinton
Lisbon	Columbiana
New Waterford	Columbiana
Columbiana	Columbiana
Keene	Coshocton
Plainfield	Coshocton
New Guilford	Coshocton
Galion	Crawford
Sulphur Springs	Crawford
Bucyrus	Crawford
Strongsville	Cuyahoga
Chagrin Falls	Cuyahoga
Euclid	Cuyahoga
Dover	Cuyahoga
Greenville	Darke
Versailles	Darke
Arcanum	Darke
Defiance	Defiance
Hicksville	Defiance
Sunbury	Delaware
Delaware	Delaware
Berlin Heights	Erie
Castalia	Erie
Milan	Erie
Carroll	Fairfield
Pleasantville	Fairfield
Amanda	Fairfield
Bloomingburg	Fayette
New Martinsburg	Fayette
Goodhope	Fayette
Pleasant Corners	Franklin

TOWN.	COUNTY.
Canal Winchester	Franklin
Westerville	Franklin
Wauseon	Fulton
Delta	Fulton
Addison	Gallia
Thurman	Gallia
Chardon	Geauga
Xenia	Greene
Cedarville	Greene
Jamestown	Greene
Cambridge	Guernsey
Antrim	Guernsey
Cleves	Hamilton
Blueash	Hamilton
Newtown	Hamilton
Mt. Healthy	Hamilton
Mt. Blanchard	Hancock
McComb	Hancock
Arcadia	Hancock
Benton Ridge	Hancock
Ada	Hardin
Forest	Hardin
Freeport	Harrison
Cadiz	Harrison
Deshler	Henry
Napoleon	Henry
Malinta	Henry
Rainsboro	Highland
Mowrystown	Highland
Hillsboro	Highland
Logan	Hocking
Laurelville	Hocking
Killbuck	Holmes
Holmesville	Holmes
New London	Huron
Wakeman	Huron
Monroeville	Huron
Camba	Jackson
Jackson	Jackson
Mt. Pleasant	Jefferson
Richmond	Jefferson
Smithfield	Jefferson
Danville	Knox
Centerburg	Knox
Fredricktown	Knox
Painesville	Lake
Madison	Lake
Pomaria	Lawrence
Burlington	Lawrence
Granville	Licking
Jersey	Licking
Brownsville	Licking
Utica	Licking
West Mansfield	Logan
Bellefontaine	Logan
Degraff	Logan
North Ridgeville	Lorain
Brownhelm	Lorain
Copopa	Lorain
Java	Lucas
Sylvania	Lucas
Waterville	Lucas
Maumee	Lucas
London	Madison
West Jefferson	Madison
Canfield	Mahoning
North Lima	Mahoning
North Jackson	Mahoning
Berlin Center	Mahoning
Marion	Marion
Caledonia	Marion
Waldo	Marion
Poe	Medina
Malletcreek	Medina
Whittlesey	Medina
Dyesville	Meigs
Chester	Meigs
Racine	Meigs
Fort Recovery	Mercer
Wabash	Mercer
Mendon	Mercer
West Charleston	Miami
Covington	Miami
Piqua	Miami
Woodsfield	Monroe
Beallsville	Monroe
Vandalia	Montgomery
Germantown	Montgomery
Trotwood	Montgomery
West Carrollton	Montgomery
Chesterhill	Morgan
Triadelphia	Morgan
Iberia	Morrow
Sparta	Morrow
Chandlersville	Muskingum
Fultonham	Muskingum
Norwich	Muskingum
Adamsville	Muskingum
Summerfield	Noble
Caldwell	Noble
Gypsum	Ottawa
Oakharbor	Ottawa
Antwerp	Paulding
Payne	Paulding
Oakwood	Paulding
Rehoboth	Perry

TOWN.	COUNTY.
Sayre	Perry
Mt. Perry	Perry
Ashville	Pickaway
Tarlton	Pickaway
Williamsport	Pickaway
Idaho	Pike
Piketon	Pike
Mantua Station	Portage
Edinburg	Portage
Randolph	Portage
Windham	Portage
New Paris	Preble
Camden	Preble
Lewisburg	Preble
Continental	Putnam
Leipsic	Putnam
Ottawa	Putnam
Lucas	Richland
Adario	Richland
Lexington	Richland
Butler	Richland
Kingston	Ross
Frankfort	Ross
Clyde	Sandusky
Fremont	Sandusky
Scioto	Scioto
Haverhill	Scioto
Mt. Joy	Scioto
Tiffin	Seneca
Republic	Seneca
Greenspring	Seneca
Jackson Center	Shelby
Sidney	Shelby
Marlboro	Stark
Beach City	Stark
Alliance	Stark
New Berlin	Stark
Osborn Corners	Summit
North Springfield	Summit
Inland	Summit
Vienna	Trumbull
Cortland	Trumbull
Newton Falls	Trumbull
Mecca	Trumbull
Winfield	Tuscarawas
Port Washington	Tuscarawas
Bolivar	Tuscarawas
New Philadelphia	Tuscarawas
Marysville	Union
Richwood	Union
Van Wert	Van Wert
Ohio City	Van Wert
Convoy	Van Wert
New Plymouth	Vinton
Wilkesville	Vinton
Waynesville	Warren
Franklin	Warren
Lebanon	Warren
Marietta	Washington
Watertown	Washington
Creston	Wayne
Shreve	Wayne
Wooster	Wayne
Lattasburg	Wayne
Bryan	Williams
Montpelier	Williams
Bloomdale	Wood
Bowling Green	Wood
Grand Rapids	Wood
Prairie Depot	Wood
Upper Sandusky	Wyandot
Nevada	Wyandot

Secretary Miller presented your Committee with a list of farmers' institute lecturers who served the Board during the institute season of 1897-'98, and a list of persons desiring to be employed in the lecture work of the Board, and, after careful examination of reports from local institute societies and all applications, recommendations and papers on file with the Secretary, relative to the lecture work, we would recommend the appointment of the following named lecturers for the ensuing institute season of 1898-'99:

John Begg, Columbus Grove.
O. E. Bradfute, Cedarville.
W. N. Cowden, Quaker City.
F. A. Derthick, Mantua.
J. Al. Dobie, Gutman.
E. E. Elliott, Morning Sun.
W. W. Farnsworth, Waterville.
C. M. Freeman, Rex.
W. David Gibbs, Columbus.
John Gould, Aurora Station.
W. J. Green, Wooster.
J. F. Greene, Sandusky.
J. Fremont Hickman, Wooster.
W. R. Houlette, Columbiana.
G. C. Housekeeper, Bowling Green.
W. A. Kellerman, Columbus.

Geo. E. Lawrence, Marion.
T. C. Laylin, Norwalk.
Wm. R. Lazenby, Columbus.
J. A. Lehman, Savannah.
S. K. McLaughlin, Hurford.
T. J. Miller, Leipsic.
H. P. Miller, Sunbury.
J. L. Roudebush, Stonelick.
Geo. E. Scott, Mount Pleasant.
Augustine D. Selby, Wooster.
J. L. Shawver, Bellefontaine.
A. Shirer, Dayton.
Chas. E. Thorne, Wooster.
M. I. Todd, Wakeman.
S. H. Todd, Wakeman.
E. Trumbo, Cranberry.
E. W. Turner, Newton Falls.
R. H. Wallace, Chillicothe.
F. M. Webster, Wooster.
A. L. White, Norwich.
David S. White, Columbus.
C. G. Williams, Gustavus.
J. E. Wing, Mechanicsburg.

Respectfully submitted,

L. G. ELY,
J. S. STUCKEY,
Committee.

On motion of Mr. Grimes the report of the Committee was adopted. Mr. Grimes further moved that each lecturer be directed to devote ten minutes to discussing the advantages of the Ohio State Fair to the people of the State, which motion prevailed.

The Secretary read a communication from Mr. J. E. Wing suggesting that alfalfa be experimented with on the State Fair grounds.

On motion of Mr. Stuckey, the Secretary was directed to inform Mr. Wing that under existing conditions it would not be practical to put alfalfa on the State Fair grounds.

A claim of two dollars and forty-five cents ($2.45) was presented from Mrs. J. C. Williamson of Hilliards, Ohio, for exhibits in the farm product department of the last fair, broken and destroyed by a dog, in its endeavors to get out of the building.

On motion of Mr. S. H. Ellis, the member in charge of the department, the claim of Mrs. Williamson was allowed and ordered paid.

The Assistant Secretary presented a classified list of the receipts and expenditures of the Ohio State Fair, as will appear for permanent record in the journal and ledger accounts for 1898.

The Board recessed to visit the State Fair grounds.

On returning from the grounds, further business was proceeded with.

A protest was submitted from Mrs. S. E. Butt of Nelsonville, Ohio, against the award made at last State Fair to exhibitor No. 235 in book 93, "large screen in wood carving." The grounds for protest were that the same piece of work had been exhibited and awarded a premium at the fair of 1897.

Mr. Grimes discussed the protest, as member in charge of the department, claiming that the grounds were not well taken, and then moved that it be not sustained, which motion prevailed.

On motion the Board adjourned to meet at the call of the President.

DEPARTMENT OF AGRICULTURE,
COLUMBUS, October 24, 1898.

The Board met at the call of the President. Members all present.

The Secretary reported the condition of the buildings under contract at the State Fair grounds, stating that the swine building was completed, with the exception of some molding to be placed over stairways, and with the exception of floors, which it had been agreed between the Board and contractor should not be constructed at present, and a proper reduction made on contract price.

The Secretary reviewed the matter of insurance on fair ground buildings, stating that in accordance with the general arrangements of insurance the sum of $6,500 had been placed on the new swine building as a matter of protection, subject to the Board's approval.

Mr. Grimes moved that the action of the Secretary in placing insurance on the swine building, be approved, which motion prevailed.

Mr. Stuckey moved that the Building Committee be directed to hold an early meeting to formally accept the swine building if found completed according to plans, and also to consider whether or not it is the best policy to continue insurance on fair ground buildings. The motion was agreed to.

On motion of Mr. Clark, the president was directed to appoint five delegates to the convention of The American Association of Fairs and Expositions. Under the instruction the President appointed Messrs. E. C. Ellis, Albert Hale, A. J. Clark, J. S. Stuckey and J. C. Bower, with alternates, S. H. Ellis, H. S. Grimes, G. Liggett and L. G. Ely.

On motion the Board adjourned to meet at the call of the President.

DEPARTMENT OF AGRICULTURE,
COLUMBUS, November 10, 1898.
10 o'clock A. M.

The Building Committee, consisting of President Bordwell and Messrs. Ely, Grimes, Liggett and Bower, met pursuant to call and proceeded to the fair grounds to examine the buildings and improvements in progress, and to pass judgment upon the same.

On return from the grounds, at 2:30 P. M., the committee convened at the Department of Agriculture.

On motion of Mr. Grimes, it was agreed that the swine building under contract by Mr. Frank P. Wolfe, was completed according to plans and specifications and the agreements of the Board and that the building be therefore accepted.

The Secretary reported in detail his action in the matter of drainage and other work that was necessary to be acted upon in the absence of specific instructions from the Board or the Building and Improvement Committee. The Secretary's action was approved.

On motion of Mr. Bower, it was agreed to construct cesspools for the cattle building.

The architect submitted a design for tablets to be placed on the new buildings, which was approved and on motion of Mr. Grimes, it was agreed that four be placed on each building.

On motion of Mr. Bower, the Secretary was authorized and instructed to act for the Committee in all cases of emergency.

On motion the Committee adjourned to meet at call.

Department of Agriculture,
Columbus, December 22, 1898.
10 o'clock A. M.

The Board met pursuant to call, there being present Messrs. Ely, Bower, Clark, Liggett, Grimes, Hale, S. H. Ellis and President Bordwell. Absent, E. C. Ellis and J. S. Stuckey.

The minutes of the preceding meeting of the Board and meeting of the Building and Improvement Committee were read and approved.

The Secretary made a statement relative to the possibilities of the Board in financial matters, and the desirability of proceeding with the erection of the sheep building, in order to complete the buildings as originally agreed upon for erection this year.

Mr. Ely moved that the contracts with Mr. Frank P. Wolfe be continued for the sheep building, and the Secretary authorized and directed to close contract for construction as per plans and specifications and Mr. Wolfe's proposition of June, 1898, supplemented by memorandum of December, 1898, ($11,900). The motion prevailed.

On motion, a recess was taken until 1:30 P. M., when the Board visited the grounds to examine the cattle building, about completed. Mr. Stuckey having arrived took part in the further proceedings.

The Board returned from the grounds at 4 o'clock P. M. and took up the revision of the premium list for the forthcoming fair of 1899.

A communication was presented from The American Shorthorn Breeders' Association offering to duplicate premiums in the breeding classes of shorthorns.

On motion of Mr. Ely, the Secretary was directed to thank the Association for its liberal offer and encouragement and notify the proper officer of the acceptance of the offer.

A communication was read from James R. Orr, Secretary of the American Polled Jersey Cattle Co., requesting a special class for polled Jerseys.

On motion of Mr. Ely, the request was granted, the classification and premiums to be the same as other cattle classes.

It was agreed that the cattle classes, with the exception above noted, remain the same as last year.

It was agreed that the farm product department be revised to accord as near as possible to the suggestions made by exhibitors, provided amount of offers does not exceed materially the aggregate amount offered last year, except for county fruit products, which shall be as follows: First premium, $125; second premium, $100; third premium, $75; fourth premium, $50; fifth premium, $30; sixth premium, $20.

On motion of Mr. S. H. Ellis, the classification for fruit, as requested by the State Horticultural Society, was agreed to, as noted on the written list submitted.

On motion of Mr. Clark, it was agreed that the revision of the floral list be referred to the Secretaries, with instructions to keep the amount within the limit of last year.

Recess until 7:30 P. M., at which hour the Board reassembled and continued the work of revising the premium list.

It was agreed, on motion of Mr. Clark, that the amount for speed premiums shall not exceed the amount offered last year, the classes and purses to be referred to the Assistant Secretary and the member that may be assigned to the horse department.

The request for third premiums in the sheep department was not granted.

The revision of the premium list for the woman's department was referred to the member in charge, the aggregate amount of offers to be the same as at last fair.

Mr. S. H. Ellis moved that the matter of accepting from the contractor the cattle building be referred to the Secretary. Motion prevailed.

Agreeable to the action of the last Agricultural Convention, and the action of this Board at its meeting, January 13, 1898, relative to the appointment of a committee on resolutions, Mr. S. H. Ellis moved that the committee consist of the chairman, Hon. J. L. Carpenter, with F. A. Derthick, of Portage county, and W. F. Hufford, of Ada, Hardin county.

On motion of Mr. S. H. Ellis, the Secretary was authorized to dispose of the brick residence at the State Fair grounds.

On motion of Mr. Clark, it was agreed that when a floor is placed in the swine building it be of brick, and that the Secretary be directed to purchase the brick to the best advantage and have the same put in sometime between April and July of the coming year.

On motion, the Board adjourned to meet Tuesday, January 10, 1899, at 7:30 o'clock P. M.

Department of Agriculture,
Columbus, January 10, 1899,
3:30 o'clock p. m.

The Board met pursuant to call of President Bordwell, who occupied the chair, all members being present.

The minutes of the preceding meeting were read and approved.

The Secretary reported the completion and acceptance of the cattle building, with payment in full to the contractor, Mr. Frank P. Wolfe. The Secretary also reported having made a contract with Mr. Wolfe for the erection of the sheep building as per plans and specifications and order of the Board at its last meeting.

The action of the Secretary in these matters was approved.

The Assistant Secretary submitted a report of the finances of the Board up to and including December 31, 1898, together with the report of committee to audit the books and accounts.

On motion of Mr. Stuckey, the financial statement and the report of the auditing committee were approved and adopted, and ordered presented to the Agricultural Convention to be published in the proceedings of that body.

Mr. O. E. Bradfute, representing The American Association of Stock Breeders, appeared before the Board to request a re-classification of the live stock departments of the Ohio State Fair, and the addition of third premiums and extended sweepstakes.

On motion of Mr. Stuckey, the recommendation of The American Association of Fairs and Expositions, for September 4 to 9 as the dates for the Ohio State Fair of 1899, was ratified and agreed to.

On motion, the Board adjourned to meet at the call of the President.

Wednesday, January 11.

Board met on call.

The Secretary presented a communication from the Secretary of the American Shorthorn Breeders' Association, relative to meeting at Chicago, which was placed on file.

The Secretary read a letter from ex-member and President A. H. Kling, in which regrets were expressed because of his inability to be present at the annual meetings, owing to sickness, and extending best wishes for successful gatherings.

On motion of Mr. Ely, the Secretary was instructed to write Mr. Kling and convey the thanks of the Board for his good wishes, and sincere sympathy for him in his sickness, earnestly regretting his inability to be with the Board on that account.

Adjourned.

JANUARY 12, 10 o'clock P. M.

At the close of the Agricultural Convention, the Board met and, there being no further business for its attention, it was, on motion, adjourned *sine die*.

W. W. MILLER, *Secretary*.
J. W. FLEMING, *Assistant Secretary*.

Department of Agriculture,
Columbus, January 12, 1899.
10:15 o'clock p. m.

The following named gentlemen, comprising the Ohio State Board of Agriculture for 1899, met for organization:

MEMBERS HOLDING OVER.

L. G. Ely	Fayette, Fulton Co	Term expires January, 1901.
G. Liggett	Watkins, Union Co	Term expires January, 1902.
H. S. Grimes	Portsmouth, Scioto Co	Term expires January, 1901.
Albert Hale	Mogadore, Summit Co	Term expires January, 1900.
S. H. Ellis	Waynesville, Warren Co	Term expires January, 1900.

NEWLY ELECTED MEMBERS.

J. S. Stuckey	Van Wert, Van Wert Co	Term expires January, 1904.
B. P. Baldwin	Tiger, Mahoning Co	Term expires January, 1904.
D. J. Green	Renrock, Noble Co	Term expires January, 1903.
Samuel Taylor	Pleasant Corners, Franklin Co	Term expires January, 1903.
C. Bordwell	Batavia, Clermont Co	Term expires January, 1903.

The following are the officers:

L. G. Ely	President.
G. Liggett	Vice President.
H. S. Grimes	Treasurer.
W. W. Miller	Secretary.
J. W. Fleming	Assistant Secretary.

CROP AND LIVE STOCK STATISTICS,

AS ESTIMATED BY THE

Ohio Department of Agriculture,

From Returns Received from its Corps of Regular Township Crop Correspondents, During the Season of 1898.

The following crop reports, with comments made at the time of publication, are selected from the regular monthlies issued by the Department, being those in which account was taken of the acreage and estimated total production of the principal crops of the state, the information being published and sent to farmers and the agricultural and news press within a few days after the information was received and results arrived at, so as to be of benefit in the distribution of the crop and in determining probable requirements for succeeding crops. The monthly reports are based upon estimates returned to the Department during the growing and harvesting seasons by the large corps of correspondents who are practical, intelligent and observing farmers, and their estimates can be relied upon as approximately correct.

The monthly crop reporting system, under the direction of the Department of Agriculture, is for the purpose of furnishing to the producer and to the general public prompt information bearing on the current year's crops and that may be of value in determining under-production or over-production of any of the principal crops of the state. The Department has no interest except to submit the facts and figures as returned by the correspondents. It does not attempt to predict possible rise or fall in prices, or advise the disposition of crops or live stock.

The crop statistics as collected by township assessors and returned to the county auditors cannot be given to the people through the annual publications until late in the year succeeding the one in which the crop was grown, and hence, while valuable as a matter of record, cannot and do not meet the purpose filled by the monthly reports made and promptly published by the Department of Agriculture. The law relating to agricultural statistics returned by township assessors now requires county auditors to return to the Department of Agriculture within thirty days after the township assessors make their reports to the county auditor. Under this provision the figures will be given to the public in the first monthly report succeeding their compilation for the state and afterwards published in the Annual State Agricultural Report.

Following these monthly crop reports will be found a table showing wheat and corn production from 1850 to 1898, inclusive, together with the range of prices, the average prices for each year and the same by series of ten years each.

Following these tables will be found the number of live stock for the years 1897–98 as returned to the Auditor of State.

ACREAGE AND CONDITION OF CROPS AND THE CONDITION OF LIVE STOCK, JULY 1, 1898.

The following estimates represent acreage and condition as reported for July 1. In the returns from the regular correspondents of the Department nearly every township in the state was represented:

WHEAT — Condition compared with an average	86	per cent.
" — Area plowed up and put in other crops	2	"
BARLEY — Condition compared with an average	88	"
RYE — Area plowed up and put in other crops	1	"
" — Condition compared with an average	87	"
OATS — Condition compared with an average	90	"
CORN — Area planted in 1897	2,946,214	acres.
" — Estimated area for 1898	2,954,564	"
" — Condition compared with an average	90	per cent.
" — Damage by cut worms	2	"
" — Damage by white grub worms	2	"
CLOVER — Damage by white grub worms	2	"
POTATOES — Area planted in 1897	116,385	acres.
" — Estimated area planted in 1898	117,341	"
" — Condition compared with an average	89	per cent.
TOBACCO — Area compared with last year	99	"
TIMOTHY — Condition compared with an average	88	"
HORSES — Condition compared with an average	96	"
PASTURES — Condition compared with an average	95	"
COLTS — Number compared with an average	75	"
CATTLE — Condition compared with an average	96	"
CALVES — Number compared with an average	90	"
WOOL — Clip compared with last year	100	"

The condition or prospect of wheat is estimated at 86 per cent. of a fair average crop for the state, which is gratifying to producers, considering the discouraging prospect presented very early in the season. The result of threshing may not fully realize this estimate, because of light and shriveled grain reported from many sections of the state, but it is not likely that this will affect the outcome to any alarming extent. Rust is also reported from many sections, and the harvest is obstructed in many fields by the wheat being badly fallen.

For acreage of corn and potatoes the estimate is based on returns from the township correspondents, and from the enumeration as made by township assessors, so that in securing results the very best information possible was at command. For corn there is an increase of area compared with 1897, of between eight and nine thousand acres. The present condition of the plant is 90 per cent. as compared with an average. Condition varies throughout the state, owing to the very late period in the season to which planting was continued. There is some very small corn at the present time but much that is well up to an average in growth and all is at this time making rapid advancement and unless some serious drawbacks occur will improve in prospect and show a good product on an increased acreage. Potatoes show a slight increase in acreage as compared with 1897, but the crop is not progressing as favorably as could be desired owing to dry weather and the ravages of the beetle. Early potatoes will certainly not yield a good average crop. Weather conditions may be favorable to improvement in the later varieties.

There has been a good hay crop and exceptionally free from weeds. There is a large increase in the acreage of tobacco, notably in the heavy tobacco counties. The number of spring colts as compared with former years is small; number of calves about an average, while the condition of horses and cattle is good. There is in many of the sheep counties a marked increase in the wool clip as compared with the last few years, showing that the sheep industry is reviving.

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND CONDITION OF CROPS AND LIVE STOCK, JULY 1, 1898.

Counties.	Wheat.		Barley.	Rye.		Oats.
	Condition compared with an average.	Area plowed up and put in other crops.	Condition compared with an average.	Area plowed up and put in other crops.	Condition compared with an average.	Condition compared with an average.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
Adams	89	1	....	75	80	74
Allen	79	8	....	....	85	92
Ashland	87	2	95	1	95	89
Ashtabula	94	2	92	....	86	92
Athens	91	1	....	15	89	93
Auglaize	72	2	75	10	80	78
Belmont	83	1	100	....	89	96
Brown	94	1	....	0	88	80
Butler	94	0	95	0	99	76
Carroll	93	0	....	0	82	84
Champaign	93	1	....	0	100	81
Clark	86	3	....	1	90	93
Clermont	91	0	90	0	90	75
Clinton	85	1	95	3	91	93
Columbiana	97	0	100	2	94	104
Coshocton	81	1	....	1	82	95
Crawford	71	6	93	0	85	92
Cuyahoga	84	1	....	2	83	83
Darke	85	1	74	1	82	91
Defiance	83	2	93	1	81	97
Delaware	83	4	100	1	91	95
Erie	81	2	80	0	80	98
Fairfield	80	1	82	0	87	84
Fayette	87	1	....	0	92	84
Franklin	78	3	75	2	82	88
Fulton	89	4	90	6	93	88
Gallia	77	2	....	0	83	81
Geauga	98	0	90	1	93	101
Greene	80	1	....	2	83	94
Guernsey	84	1	....	6	77	91
Hamilton	91	0	85	5	88	60
Hancock	86	2	90	4	87	94
Hardin	81	6	....	0	89	94
Harrison	79	3	88	0	83	94
Henry	86	2	86	0	78	98
Highland	78	1	75	2	68	67
Hocking	95	0	....	0	100	88
Holmes	90	0	78	0	93	91
Huron	79	4	98	2	91	94
Jackson	80	0	....	0	74	79
Jefferson	81	1	70	0	82	95
Knox	90	2	100	0	87	95
Lake	90	0	....	1	96	93
Lawrence	91	0	98	4	83	87
Licking	91	0	....	0	80	89
Logan	88	2	....	0	88	90
Lorain	84	0	95	0	89	98
Lucas	91	1	90	0	80	94
Madison	85	5	80	0	88	97
Mahoning	94	1	....	0	82	89
Marion	73	5	88	0	78	89
Medina	85	0	....	0	83	103
Meigs	90	0	92	6	92	91
Mercer	79	4	91	0	69	91
Miami	90	2	81	1	85	91
Monroe	85	1	....	0	89	94
Montgomery	85	0	....	0	84	80
Morgan	75	0	72	0	80	84
Morrow	83	2	....	0	87	92
Muskingum	91	1	....	5	87	93
Noble	84	3	90	1	81	87
Ottawa	85	3	90	0	87	95
Paulding	91	0	98	0	90	97

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND CONDITION OF CROPS AND LIVE STOCK, JULY 1, 1898 — Continued.

Counties.	Wheat.		Barley.	Rye.		Oats.
	Condition compared with an average.	Area plowed up and put in other crops.	Condition compared with an average.	Area plowed up and put in other crops.	Condition compared with an average.	Condition compared with an average.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
Perry	90	0	....	0	97	95
Pickaway	78	0	....	0	87	77
Pike	75	1	....	0	....	70
Portage	92	0	90	0	89	94
Preble	100	0	97	0	100	88
Putnam	72	3	84	0	84	88
Richland	84	1	86	0	86	91
Ross	78	4	....	0	....	79
Sandusky	79	3	85	0	85	91
Scioto	86	4	80	0	95	85
Seneca	73	2	77	1	82	91
Shelby	73	1	73	0	74	87
Stark	78	0	....	0	88	82
Summit	84	0	100	3	98	97
Trumbull	90	0	....	0	88	87
Tuscarawas	86	1	97	0	87	94
Union	86	2	....	0	82	93
Van Wert	77	1	89	0	81	85
Vinton	80	1	100	1	95	85
Warren	88	0	92	0	90	74
Washington	84	2	....	0	91	86
Wayne	82	1	75	0	88	91
Williams	85	2	100	0	85	100
Wood	84	3	88	2	85	91
Wyandot	79	3	100	0	77	98
Average per cent	86	2	88	1	87	90

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND CONDITION OF CROPS AND LIVE STOCK, JULY 1, 1898 — Continued.

Counties.	Corn.					Clover.
	Area planted in 1897.	Estimated area for 1898.	Condition compared with an average.	Damage by cut worms.	Damage by white grub worms.	Damage by white grub worms.
	Acres.	Acres.	Per ct.	Per ct.	Per ct.	Per ct.
Adams	32,287	30,996	86	1	7	4
Allen	34,639	35,419	91	2	0	2
Ashland	25,324	24,311	82	4	4	5
Ashtabula	15,725	15,725	88	4	1	1
Athens	16,030	16,190	94	0	1	0
Auglaize	41,577	43,436	82	2	0	0
Belmont	25,709	26,480	98	1	2	3
Brown	47,775	47,297	94	2	0	0
Butler	50,623	49,260	81	0	1	0
Carroll	14,293	14,447	85	5	3	1
Champaign	51,003	51,003	99	0	0	3
Clark	46,403	47,403	93	2	0	4
Clermont	34,312	33,626	81	1	0	0
Clinton	61,395	60,781	99	1	3	1
Columbiana	17,851	18,451	97	3	2	6
Coshocton	25,307	25,307	89	0	1	0
Crawford	34,356	34,356	91	2	1	1
Cuyahoga	9,423	9,611	88	4	2	0
Darke	81,385	78,943	90	3	1	1
Defiance	26,091	29,118	93	1	0	2
Delaware	41,139	41,139	94	2	1	1
Erie	16,176	16,014	93	2	1	2
Fairfield	46,326	41,693	86	2	1	1
Fayette	62,573	61,947	97	1	0	0
Franklin	59,316	56,350	86	2	0	2
Fulton	25,881	26,211	80	4	0	0
Gallia	26,351	26,009	99	1	4	3
Geauga	9,979	10,179	89	1	1	2
Greene	51,288	57,127	89	0	2	2
Guernsey	20,139	21,369	93	2	1	0
Hamilton	15,898	15,421	78	4	0	0
Hancock	48,182	49,627	94	3	0	3
Hardin	35,348	38,095	94	1	0	1
Harrison	13,212	12,816	88	1	1	0
Henry	48,343	51,452	94	5	1	5
Highland	55,407	53,191	84	3	2	3
Hocking	27,892	27,892	95	1	1	2
Holmes	23,101	23,101	85	2	3	4
Huron	28,447	29,781	95	2	1	3
Jackson	11,987	11,867	85	8	4	0
Jefferson	14,417	14,233	95	3	2	3
Knox	30,805	30,805	89	1	4	2
Lake	6,398	6,462	95	2	1	1
Lawrence	18,722	18,348	92	5	1	6
Licking	48,268	47,785	85	1	3	3
Logan	35,834	33,326	93	1	0	0
Lorain	19,962	20,162	94	2	0	0
Lucas	18,760	19,449	100	1	0	5
Madison	80,577	78,965	92	2	1	4
Mahoning	15,403	15,095	90	3	2	1
Marion	41,629	43,659	87	4	2	5
Medina	20,278	19,345	93	0	0	0
Meigs	17,683	17,334	76	1	1	1
Mercer	44,393	47,886	85	4	0	0
Miami	46,539	44,677	93	3	2	4
Monroe	18,184	19,064	99	3	3	2
Montgomery	49,151	49,151	90	5	4	0
Morgan	17,216	16,755	90	1	1	3
Morrow	27,332	29,021	88	2	1	1
Muskingum	29,718	29,124	85	1	0	2
Noble	18,386	17,974	88	3	4	4
Ottawa	14,823	14,082	88	5	0	6
Paulding	32,888	35,352	89	1	0	1

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND CONDITION OF CROPS AND LIVE STOCK, JULY 1, 1898 — Continued.

Counties.	Corn.					Clover.
	Area planted in 1897.	Estimated area for 1898.	Condition compared with an average.	Damage by cut worms.	Damage by white grub worms.	Damage by white grub worms.
	Acres.	Acres.	Per ct.	Per ct.	Per ct.	Per ct.
Perry	18,673	18,486	94	1	4	2
Pickaway	71,146	70,435	87	1	2	3
Pike	25,258	25,258	81	1	6	5
Portage	18,005	17,645	88	2	1	5
Preble	50,809	50,809	97	2	2	2
Putnam	57,894	57,894	79	6	2	5
Richland	30,186	30,519	81	7	8	5
Ross	63,730	63,730	92	2	2	2
Sandusky	32,624	31,961	96	1	0	0
Scioto	21,879	22,714	85	1	1	8
Seneca	43,426	46,680	83	1	0	2
Shelby	38,910	38,132	83	3	2	0
Stark	30,988	30,770	80	5	3	2
Summit	19,176	18,695	87	3	0	3
Trumbull	16,527	16,196	93	2	0	2
Tuscarawas	23,897	23,419	83	2	2	2
Union	53,564	51,421	86	0	1	4
Van Wert	48,231	46,687	72	1	0	2
Vinton	12,217	12,972	96	3	3	1
Warren	45,493	45,038	88	1	1	0
Washington	24,906	25,404	97	1	1	1
Wayne	35,799	35,441	84	2	2	4
Williams	25,058	28,954	100	2	2	10
Wood	77,205	77,205	92	1	0	2
Wyandot	34,446	36,604	95	2	0	4
Average per cent	....	....	90	2	2	2
Totals	2,946,214	2,954,564	....	....	....	....

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND CONDITION OF CROPS AND LIVE STOCK, JULY 1, 1898 — Continued.

Counties.	Potatoes.			Tobacco.	Timothy.
	Area planted in 1897.	Estimated area planted in 1897.	Condition compared with an average.	Area compared with last year.	Condition compared with an average.
	Acres.	Acres.	Per ct.	Per ct.	Per ct.
Adams	218	174	71	110	81
Allen	766	743	89	....	94
Ashland	995	970	100	....	82
Ashtabula	3,216	3,152	98	....	89
Athens	573	557	90	....	88
Auglaize	1,109	998	68	85	85
Belmont	920	902	96	89	78
Brown	823	872	78	120	89
Butler	1,237	1,175	82	125	76
Carroll	754	710	81	....	77
Champaign	566	509	97	....	90
Clark	817	735	96	....	87
Clermont	1,637	1,600	76	115	77
Clinton	565	582	97	98	93
Columbiana	1,690	1,627	100	80	94
Coshocton	1,015	995	95	100	93
Crawford	1,048	975	89	....	81
Cuyahoga	5,684	6,139	91	....	91
Darke	1,847	1,792	91	160	88
Defianee	971	928	94	....	94
Delaware	615	597	88	....	86
Erie	2,607	2,555	93	....	97
Fairfield	1,192	1,180	83	....	94
Fayette	144	138	83	....	100
Franklin	3,362	3,261	92	....	94
Fulton	1,184	1,220	98	....	91
Gallia	451	451	95	98	91
Geauga	2,588	2,741	94	....	88
Greene	922	874	88	110	83
Guernsey	504	497	87	105	99
Hamilton	5,388	5,226	90	77	71
Hancock	1,308	1,269	80	....	95
Hardin	1,216	1,342	94	....	94
Harrison	346	343	98	....	96
Henry	1,618	1,537	90	95	86
Highland	384	365	80	88	82
Hocking	763	786	85	....	95
Holmes	869	878	88	....	89
Huron	1,438	1,467	106	....	106
Jackson	165	162	73	....	75
Jefferson	815	791	99	....	88
Knox	703	682	95	....	91
Lake	1,545	1,514	95	....	92
Lawrence	392	376	83	95	60
Licking	1,476	1,446	91	....	91
Logan	652	619	93	....	77
Lorain	2,133	2,271	96	....	92
Lucas	2,927	3,132	94	....	88
Madison	237	270	88	....	92
Mahoning	1,616	1,535	92	....	84
Marion	864	864	86	....	83
Medina	1,969	1,930	93	....	93
Meigs	952	933	90	97	92
Mercer	972	954	79	....	86
Miami	1,096	986	80	109	90
Monroe	1,002	1,271	97	92	93
Montgomery	1,634	1,634	95	100	100
Morgan	452	559	88	87	88
Morrow	927	1,218	96	....	91
Muskingum	1,444	1,415	100	80	95
Noble	587	575	82	76	97
Ottawa	650	650	80	....	103
Paulding	597	597	98	....	95

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND CONDITION OF CROPS AND LIVE STOCK, JULY 1, 1898—Continued.

Counties.	Potatoes.			Tobacco.	Timothy.
	Area planted in 1897.	Estimated area planted in 1897.	Condition compared with an average.	Area compared with last year.	Condition compared with an average.
	Acres.	Acres.	Per ct.	Per ct.	Per ct.
Perry	738	723	98	....	90
Pickaway	1,000	1,000	68	....	91
Pike	510	510	71	67	83
Portage	5,222	5,361	92	90	94
Preble	724	724	88	111	96
Putnam	1,212	1,176	89	....	86
Richland	1,705	2,357	92	80	82
Ross	853	793	79	....	71
Sandusky	1,913	1,817	97	....	89
Scioto	911	884	84	100	84
Seneca	1,472	1,421	87	....	92
Shelby	886	842	95	107	94
Stark	3,347	3,213	73	....	78
Summit	2,550	2,608	94	....	93
Trumbull	2,876	3,694	92	....	91
Tuscarawas	2,082	2,082	92	....	90
Union	571	542	92	....	95
Van Wert	740	681	69	....	91
Vinton	526	515	94	....	96
Warren	604	627	80	116	86
Washington	1,831	1,813	91	100	91
Wayne	2,024	1,822	89	93	84
Williams	928	1,021	100	....	77
Wood	1,157	1,139	92	....	94
Wyandot	844	730	90	....	93
Average per cent	....	....	89	99	88
Totals	116,385	117,341	....	....	....

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND CONDITION OF CROPS AND LIVE STOCK, JULY 1, 1898—Continued.

Counties.	Horses.	Pastures.	Colts.	Cattle.	Calves.	Wool.
	Condition compared with an average.	Condition compared with an average.	Number compared with an average.	Condition compared with an average.	Number compared with last year.	Crop compared with last year.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
Adams	97	86	88	94	89	76
Allen	97	92	77	99	99	101
Ashland	94	100	77	98	93	98
Ashtabula	91	98	71	97	104	99
Athens	93	93	80	100	101	105
Auglaize	93	89	85	97	73	95
Belmont	99	102	86	93	95	109
Brown	95	96	75	99	95	110
Butler	99	96	70	100	100	93
Carroll	90	99	85	89	88	102
Champaign	98	101	63	98	94	99
Clark	98	99	90	101	93	101
Clermont	97	88	80	94	99	102
Clinton	98	98	80	96	89	102
Columbiana	98	108	99	102	105	115
Coshocton	100	105	70	97	92	105
Crawford	94	92	74	98	92	99
Cuyahoga	97	99	78	97	93	100
Darke	94	89	72	90	85	100
Defiance	99	89	69	99	95	92
Delaware	87	95	78	93	85	98
Erie	99	101	80	97	93	102
Fairfield	93	97	70	94	97	93
Fayette	100	104	65	99	80	95
Franklin	96	92	95	99	107	100
Fulton	98	100	85	96	108	104
Gallia	95	101	68	92	77	103
Geauga	100	101	71	99	110	101
Greene	93	97	75	96	93	100
Guernsey	96	101	70	99	94	109
Hamilton	96	70	75	98	96	96
Hancock	100	77	91	99	103	107
Hardin	97	95	65	100	91	102
Harrison	99	99	68	96	87	109
Henry	88	92	69	92	96	93
Highland	91	88	65	95	73	91
Hocking	100	99	100	100	98	105
Holmes	97	91	80	100	98	91
Huron	100	102	78	105	94	105
Jackson	88	95	71	90	83	88
Jefferson	97	94	65	94	87	99
Knox	98	104	75	101	91	105
Lake	100	98	60	97	93	98
Lawrence	100	90	69	86	94	90
Licking	95	101	72	96	83	92
Logan	92	95	60	91	78	90
Lorain	99	101	55	99	92	105
Lucas	97	92	86	103	93	106
Madison	97	99	79	97	94	96
Mahoning	89	99	65	89	94	95
Marion	98	98	80	92	88	105
Medina	96	97	80	99	100	99
Meigs	96	99	80	92	85	105
Mercer	96	94	89	98	101	105
Miami	90	92	71	93	86	98
Monroe	97	101	78	95	92	100
Montgomery	90	95	75	100	90	95
Morgan	92	90	78	95	85	101
Morrow	98	97	80	99	91	100
Muskingum	95	95	84	92	95	98
Noble	95	99	76	97	87	99
Ottawa	100	100	90	100	90	100
Paulding	99	100	80	100	97	97

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND CONDITION OF CROPS AND LIVE STOCK, JULY 1, 1898 — Concluded.

Counties.	Horses.	Pastures.	Colts.	Cattle.	Calves.	Wool.
	Condition compared with an average.	Condition compared with an average.	Number compared with an average.	Condition compared with an average.	Number compared with last year.	Crop compared with last year.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
Perry	96	97	60	98	97	104
Pickaway	94	86	92	97	92	105
Pike	92	82	55	85	75	100
Portage	97	101	69	98	103	99
Preble	100	100	81	100	101	106
Putnam	98	97	63	97	74	100
Richland	95	92	88	97	90	100
Ross	92	88	68	95	93	101
Sandusky	92	94	55	94	78	98
Scioto	98	94	55	98	74	91
Seneca	95	88	73	93	87	95
Shelby	91	98	50	95	90	103
Stark	92	85	58	89	86	92
Summit	98	97	59	97	105	94
Trumbull	95	98	74	97	106	97
Tuscarawas	97	98	83	97	93	103
Union	94	96	76	94	86	100
Van Wert	98	98	72	96	93	91
Vinton	98	102	78	101	96	110
Warren	99	84	73	99	98	100
Washington	99	97	77	99	93	105
Wayne	97	97	75	91	99	97
Williams	92	90	66	98	73	107
Wood	95	97	62	97	80	100
Wyandot	98	94	84	97	91	93
Average per cent	96	95	75	96	90	100

ACREAGE, PRODUCT AND CONDITION OF CROPS, OCTOBER 1, 1898.

The following report represents the crops named as calculated from official reports to the Department of Agriculture. The acreage of wheat, oats, barley and rye is from the enumerations as made by township assessors. The product per acre of these crops is from reports of actual threshing throughout the several counties of the State, as returned through the regular township crop correspondents, who report also the condition or prospect of the other crops named:

WHEAT—Area as returned by township assessors	2,671,980 acres.
“ Product per acre, estimated from threshers' returns	15.82 bushels.
“ Total product for the State as estimated from threshers' returns	42,268,161 bushels.
“ Quality compared with an average	89 per cent.
“ Crop of 1897 still in producers' hands	7 per cent.
OATS—Area as returned by township assessors	943,844 acres.
“ Product per acre, estimated from threshers' returns	33.2 bushels.
“ Total product for the State as estimated from threshers' returns	31,372,389 bushels.
“ Quality compared with an average	81 per cent.
BARLEY—Area as returned by township assessors	22,051 acres.
“ Product per acre, estimated from threshers' returns	28 bushels.
“ Total product for the State as estimated from threshers' returns	619,883 bushels.
“ Quality compared with an average	90 per cent.
RYE—Area as returned by township assessors	37,149 acres.
“ Product per acre estimated from threshers' returns	16 bushels.
“ Total product for the State as estimated from threshers' returns	600,389 bushels.
“ Quality compared with an average	90 per cent.
CORN—Prospect compared with an average	95 per cent.
“ Average date of cutting for fodder	September 13.
POTATOES—Probable total yield compared with an average	61 per cent.
TOBACCO—Condition compared with an average	94 per cent.
PASTURES—Condition compared with an average	94 per cent.
APPLES—Prospect compared with an average	14 per cent.

There is a large wheat product and, generally speaking for the State, the quality is good except where damaged in stack or shock by the heavy rains immediately after harvest. There are some reports of weevil, but no great damage is claimed.

Wheat seeding completed under favorable conditions and plant coming up nicely. The crop of 1897 was sold off much closer than usual, owing to better prices; a greater amount of the 1898 crop is being held.

September 24th a heavy wind storm swept over the northern portion of the State, being most severe and destructive in the northwest, where it came in the nature of a hurricane, damaging shock corn and destroying fodder. Fences were torn down, buildings unroofed and timber broken and blown down.

Most of the corn was planted late and the shooting and filling occurred during the hot, wet weather, starting too many ears. Heavy beating rains knocked the pollen off, and a great deal of the corn in some sections did not fill or mature properly and is light and chaffy, affecting its value as merchantable grade. These conditions are not apparent in the great corn belt or the heaviest corn producing counties of the southern central part of the State where the crop is good and even excellent, so that for the State there is a large product and the greater portion of good quality. Crop cut without damage by frost.

The oats crop, in many places, was damaged by rains after being cut and the quality is therefore not high.

Potatoes have declined since last report, owing to rot. The crop will be very light.

The weather conditions have been favorable to tobacco, and much of the crop is now safely housed and curing up well. If severe frosts do not occur for a few days, the entire crop will be safe and a fair product of good quality. Much of the crop is already sold.

Pastures are short in some sections, but where rains have occurred there is still considerable that is good and will continue for some time.

The apple crop is one of the poorest in years. Has declined since last report by reason of the fruit falling off the trees. In many sections there is a total failure and in no part of the State is there even a fair crop.

Hog cholera is reported from many counties, being more particularly mentioned in the following counties: Champaign, Clinton, Crawford, Darke, Defiance, Erie, Hardin, Logan, Madison, Muskingum, Pike, Putnam, Ross and Williams.

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE, PRODUCT AND CONDITION OF CROPS, OCTOBER 1, 1898.

Counties.	Wheat.				
	Area as returned by township assessors.	Prodnct per acre.	Total product as estimated from threshers' returns.	Quality compared with an average.	Crop of 1897 still in producers' hands.
	Acres.	Bushels.	Bushels.	Per ct.	Per ct.
Adams	25,896	12½	323,700	88	....
Allen	29,581	12¾	377,158	95	24
Ashland	35,969	14	503,566	79	1
Ashtabula	13,554	19	257,526	91	22
Athens	14,309	15	214,635	95	5
Auglaize	37,128	14½	538,396	90	1
Belmont	28,123	17	478,091	90	5
Brown	28,323	14½	410,684	91	14
Butler	57,865	17¼	998,171	98	3
Carroll	17,012	16¼	276,445	90	7
Champaign	43,366	14¼	629,807	95	3
Clark	41,120	14½	596,240	92	10
Clermont	19,981	13½	268,744	94	1
Clinton	37,820	14	529,480	90	8
Columbiana	23,824	20	476,480	92	5
Coshocton	32,169	14	450,366	87	1
Crawford	27,653	16	442,448	91	4
Cuyahoga	10,656	21	223,776	97	18
Darke	67,373	17½	1,179,028	97	15
Defiance	24,201	16¼	393,066	89	17
Delaware	22,062	14	308,868	96	9
Erie	19,628	14	274,792	83	3
Fairfield	47,443	15¼	723,506	72	5
Fayette	48,238	15½	747,689	88	15
Franklin	46,087	13½	622,174	91	12
Fulton	24,504	15	367,560	90	25
Gallia	22,404	12	268,848	65	2
Geauga	10,443	20½	214,082	100	2
Greene	52.353	15¼	798,383	91	27
Guernsey	21,612	14¼	307,971	92	12
Hamilton	15,819	19¼	304,515	100	16
Hancock	47.669	17½	834,208	95	12
Hardin	27,884	13	362,492	70	3
Harrison	13,947	16½	232,026	92	4
Henry	36.982	18¾	693,413	90	1
Highland	43,095	14¼	635.354	86	11
Hocking	34.146	14½	494,117	85	6
Holmes	25,980	14	363,720	80	2
Huron	30.462	16½	502,623	90	8
Jackson	14,781	12½	184,763	88	5
Jefferson	17.004	16	272,064	96	2
Knox	55,829	14	781,606	97	1
Lake	6.225	18	122,050	90	6
Lawrence	9,730	13¼	128,923	87	20
Licking	47.693	15	515,395	89	3
Logan	32.139	15¼	490,119	92	3
Lorain	24,266	17½	424,655	86	17
Lucas	15,388	20	307,760	94	2
Madison	39,205	12	470,460	91	17
Mahoning	18,539	18¾	346,606	89	5
Marion	21,932	14½	318,014	84	11
Medina	23,873	17	405,841	91	1
Meigs	20.650	14¾	304,588	96	12
Mercer	35.692	12	418,304	94	....
Miami	46,458	19	882,702	100	22
Monroe	20,874	13½	281,699	86	14
Montgomery	45.061	14	630,854	80	15
Morgan	15.350	14¾	226,413	82	4
Morrow	16,779	15	251,685	94	4
Muskingum	32.427	15	486,405	92	3
Noble	17,009	13½	329,622	80	4
Ottawa	20.122	13	362,196	95	2
Paulding	16,470	17½	183,225	100	3

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON ACREAGE, PRODUCT AND CONDITION OF CROPS, OCTOBER 1, 1898 — Continued.

Counties.	Wheat.				
	Area as returned by township assessors.	Product per acre.	Total product as estimated from threshers' returns.	Quality compared with an average.	Crop of 1897 still in producers' hands.
	Acres.	Bushels.	Bushels.	Per ct.	Per ct.
Perry	20,215	17¾	358,816	89	4
Pickaway	57,828	14¼	824,049	68	11
Pike	20,875	15	313,125	67	....
Portage	23,926	19	444,594	86	2
Preble	49,038	19	931,722	100	12
Putnam	43,188	16	691,008	89	1
Richland	40,156	17¼	692,691	74	8
Ross	48,988	15¾	767,461	91	18
Sandusky	41,032	18	738,576	89	2
Scioto	20,064	17½	351,120	68	....
Seneca	52,817	18¼	957,910	92	4
Shelby	35,191	12	422,292	92	6
Stark	51,085	17	868,445	90	4
Summit	29,724	22	653,928	95	5
Trumbull	16,829	19	319,751	95	13
Tuscarawas	31,022	17¼	535,129	88	2
Union	22,423	15	336,345	86	16
Van Wert	34,534	14½	500,743	93	25
Vinton	10,901	12½	136,263	88	1
Warren	35,694	17½	624,645	97	....
Washington	30,115	15¼	459,254	76	1
Wayne	50,254	16½	829,191	89	3
Williams	20,419	16½	336,914	88	2
Wood	42,218	21½	907,687	93	3
Wyandot	28,267	16½	466,405	86	2
Average per cent	....	Bus. 15.82	....	89	7
Totals	2,671,980	....	42,268,161	....	....

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE, PRODUCT AND CONDITION OF CROPS, OCTOBER 1, 1898—Continued.

Counties.	Oats.			
	Area as returned by township assessors.	Product per acre.	Total product as estimated from threshers' returns.	Quality compared with an average.
	Acres.	Bushels.	Bushels.	Per ct.
Adams	2,557	21	53,697	70
Allen	10,246	38	389,348	100
Ashland	16,467	28	461,076	83
Ashtabula	24,143	28	676,004	91
Athens	1,401	29	40,269	100
Auglaize	12,965	31	401,915	77
Belmont	6,620	25	165,500	67
Brown	5,542	24	133,008	70
Butler	6,171	26	160,446	81
Carroll	14,409	26	374,634	71
Champaign	7,529	35	263,515	90
Clark	4,848	36	174,528	93
Clermont	6,817	21	143,157	89
Clinton	2,712	27	73,224	90
Columbiana	19,929	28	558,012	68
Coshocton	8,957	21	188,097	79
Crawford	21,171	36	762,156	84
Cuyahoga	11,905	38	452,390	96
Darke	16,361	32	523,552	81
Defiance	17,607	38	669,066	92
Delaware	14,835	33	489,555	95
Erie	13,283	32	425,056	78
Fairfield	3,222	27	86,994	70
Fayette	1,104	25	27,600	71
Franklin	9,829	28	275,212	94
Fulton	18,606	34¼	637,255	88
Gallia	2,878	20	57,560	70
Geauga	13,232	36	476,352	80
Greene	4,269	24	102,456	75
Guernsey	5,807	29	168,403	86
Hamilton	2,928	18½	54,168	63
Hancock	10,104	37	373,848	93
Hardin	9,269	30	278,070	85
Harrison	5,099	30	152,970	86
Henry	10,328	38	392,464	95
Highland	1,775	26	46,150	68
Hocking	1,427	21	29,967	90
Holmes	15,320	29	444,280	75
Huron	25,285	33	834,405	82
Jackson	919	22	20,218	82
Jefferson	10,044	27	271,188	76
Knox	10,600	30	318,000	86
Lake	6,396	33	211,068	77
Lawrence	4,152	25	103,800	87
Licking	13,305	28	372,540	82
Logan	8,658	31	268,398	89
Lorain	20,204	35	707,140	91
Lucas	12,718	38	483,284	91
Madison	6,274	32	200,768	96
Mahoning	17,959	37	664,483	78
Marion	15,563	36	560,268	96
Medina	22,084	38	839,192	89
Meigs	2,852	27	71,004	92
Mercer	20,919	28	585,732	95
Miami	12,474	31	386,694	92
Monroe	6,571	21¼	139,633	89
Montgomery	10,655	30	319,650	90
Morgan	2,066	25	51,650	88
Morrow	15,208	34	517,072	88
Muskingum	5,660	29	164,140	89
Noble	2,946	25	73,650	73
Ottawa	7,562	36	272,232	73
Paulding	10,073	39	392,847	95

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE, PRODUCT AND CONDITION OF CROPS, OCTOBER 1, 1898—Continued.

Counties.	Oats.			
	Area as returned by township assessors.	Product per acre.	Total products as estimated from threshers' returns	Quality compared with an average.
	Acres.	Bushels.	Bushels.	Per ct.
Perry	1,162	30	34,860	78
Pickaway	894	24	21,456	80
Pike	1,422	22	31,284	59
Portage	19,615	35	686,525	73
Preble	8,246	30	247,380	95
Putnam	5,651	35	197,785	91
Richland	23,517	38	893,646	83
Ross	1,192	24	28,608	87
Sandusky	16,146	37	597,402	85
Scioto	3,084	27	83,268	61
Seneca	19,227	36	692,172	86
Shelby	18,722	26	486,772	86
Stark	30,340	33	1,001,220	84
Summit	19,185	32	613,920	78
Trumbull	21,495	32	687,840	79
Tuscarawas	19,565	32	626,080	69
Union	11,429	32	365,728	86
Van Wert	10,548	35	369,180	88
Vinton	1,302	19	24,738	81
Warren	5,758	27	155,466	90
Washington	7,453	24	178,872	81
Wayne	24,730	35	865,550	81
Williams	22,959	37	849,483	82
Wood	28,788	41	1,180,308	86
Wyandot	10,678	42	448,476	94
Average per cent	....	Bus. 33.2	....	81
Totals	943,844	....	31,372,389	....

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE, PRODUCT AND CONDITION OF CROPS, OCTOBER 1, 1898—Continued.

Counties.	Barley.			
	Area as returned by township assessors.	Product per acre.	Total product as estimated from threshers' returns.	Quality compared with an average.
	Acres.	Bushels.	Bushels.	Per ct.
Adams	....	....	....	....
Allen	146	23	3,358	90
Ashland	196	25	4,900	90
Ashtabula	102	19	1,938	87
Athens	....	....	....	....
Auglaize	75	35	2,625	83
Belmont	157	21	3,297	88
Brown	....	....	....	....
Butler	804	28½	22,914	93
Carroll	8	26	208	90
Champaign	57	21	1,197	96
Clark	13	25	325	98
Clermont	....	....	....	....
Clinton	26	26	676	92
Columbiana	42	19	798	83
Coshocton	8	11	88	90
Crawford	204	28	5,712	85
Cuyahoga	8	25	200	90
Darke	609	25	15,225	77
Defiance	986	30	29,580	100
Delaware	54	21	1,134	100
Erie	552	25	13,800	90
Fairfield	45	21	945	89
Fayette	2	25	50	91
Franklin	31	24	744	87
Fulton	580	25	14,500	92
Gallia	1	26	26	96
Geauga	19	14	266	75
Greene	35	25	875	90
Guernsey	49	24	1,176	95
Hamilton	1,397	32	44,704	88
Hancock	258	25	6,450	93
Hardin	14	26	364	95
Harrison	258	16	4,128	80
Henry	1,753	28	49,084	88
Highland	10	25	250	70
Hocking	....	....	....	....
Holmes	39	19	741	85
Huron	359	25	8,975	82
Jackson	....	....	....	....
Jefferson	71	24	1,704	96
Knox	10	20	200	75
Lake	31	35	1,085	90
Lawrence	8	18	144	80
Licking	50	19	950	89
Logan	87	25	2,175	80
Lorain	69	21	1,419	90
Lucas	439	28	12,292	85
Madison	34	21	714	90
Mahoning	21	18	378	100
Marion	11	26	286	88
Medina	93	19	1,767	93
Meigs	23	18	414	92
Mercer	295	16	4,720	95
Miami	157	30	4,710	75
Monroe	6	25	150	92
Montgomery	149	26	3,874	95
Morgan	....	....	....	....
Morrow	5	25	125	90
Muskingum	16	18	288	89
Noble	4	22	66	91
Ottawa	2,037	30	61,110	95
Paulding	2,076	33	68,508	100

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE, PRODUCT AND CONDITION OF CROPS, OCTOBER 1, 1898—Continued.

Counties.	Barley.			
	Area as returned by township assessors.	Product per acre.	Total product as estimated from threshers' returns.	Quality compared with an average.
	Acres.	Bushels.	Bushels.	Per ct.
Perry	....	....	....	....
Pickaway	....	....	....	....
Pike	24	19	456	90
Portage	20	19	380	89
Preble	57	28	1,596	88
Putnam	1,613	28	45,064	85
Richland	201	28	5,628	73
Ross	2	26	52	90
Sandusky	148	30	4,440	100
Scioto	6	28	168	100
Seneca	87	25	2,175	100
Shelby	155	12	1,860	77
Stark	16	18	288	89
Summit	28	20	560	93
Trumbull	10	19	190	97
Tuscarawas	23	28	644	75
Union	26	22	572	96
Van Wert	1,454	33	47,982	92
Vinton	12	25	300	94
Warren	237	20	4,740	97
Washington	....	....	....	....
Wayne	99	32	3,168	91
Williams	1,007	22	22,154	91
Wood	2,223	31	68,913	83
Wyandot	13	17	221	100
Average per cent	....	Bus. 28	....	90
Total	22,051	....	619,883	....

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE, PRODUCT AND CONDITION OF CROPS, OCTOBER 1, 1898—Continued.

Counties.	Rye.			
	Area as returned by township assessors.	Product per acre.	Total product as estimated from threshers' returns.	Quality compared with an average.
	Acres.	Bushels.	Bushels.	Per ct.
Adams	590	16	9,440	92
Allen	159	15	2,385	100
Ashland	360	13¼	4,770	95
Ashtabula	922	19	17,518	94
Athens	40	20	800	....
Auglaize	415	15	6,225	100
Belmont	217	18	3,906	93
Brown	1,672	15	25,080	92
Butler	90	14	1,260	90
Carroll	224	12	2,688	55
Champaign	280	12	3,360	100
Clark	348	15	5,220	90
Clermont	1,100	13	14,300	97
Clinton	383	17	7,511	91
Columbiana	245	14	3,430	95
Coshocton	838	27	22,626	66
Crawford	171	18	3,078	97
Cuyahoga	539	15	8,085	99
Darke	790	19	15,010	100
Defiance	231	16	3,596	97
Delaware	296	26	7,696	95
Erie	406	15	6,090	97
Fairfield	470	16	7,520	70
Fayette	234	17	3,978	98
Franklin	506	16	8,096	92
Fulton	497	19	9,443	86
Gallia	313	10	3,130	92
Geauga	224	20	4,480	100
Greene	708	10	7,030	75
Guernsey	311	13	4,043	100
Hamilton	896	15	13,440	100
Hancock	267	12	3,204	92
Hardin	191	14	2,674	90
Harrison	78	15	1,170	90
Henry	2,832	20	56,640	93
Highland	1,076	14	15,064	88
Hocking	157	17	2,669	91
Holmes	447	12	5,364	95
Huron	209	14	2,926	82
Jackson	30	15	450	90
Jefferson	44	16	704	100
Knox	766	13	9,958	95
Lake	669	14	9,366	94
Lawrence	85	14	1,190	75
Licking	1,748	13	22,724	91
Logan	437	16	6,992	85
Lorain	181	16	2,896	100
Lucas	843	14	11,802	83
Madison	303	10	3,030	95
Mahoning	300	14	4,200	95
Marion	83	15	1,245	96
Medina	369	15	5,535	95
Meigs	239	14	3,346	87
Mercer	564	15	8,460	100
Miami	228	12	2,736	65
Monroe	453	15	6,795	85
Montgomery	135	12	1,620	100
Morgan	68	17	1,156	85
Morrow	407	18	7,326	100
Muskingum	558	11	6,138	94
Noble	80	20	1,600	89
Ottawa	442	20	8,840	94
Paulding	577	23	13,271	93

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE, PRODUCT AND CONDITION OF CROPS, OCTOBER 1, 1898—Continued.

Counties.	Rye.			
	Area as returned by township assessors.	Product per acre.	Total product as estimated from threshers' returns.	Quality compared with an average.
	Acres.	Bushels.	Bushels.	Per ct.
Perry	145	28	4,060	93
Pickaway	337	21	7,077	97
Pike	220	15	3,300	80
Portage	363	17	6,171	89
Preble	240	16	3,840	100
Putnam	498	16	7,968	90
Richland	583	14	7,162	100
Ross	285	15	4,275	68
Sandusky	354	20	7,080	100
Scioto	136	20	2,720	95
Seneca	191	30	5,730	80
Shelby	354	11	3,894	82
Stark	375	17	6,375	95
Summit	179	20	3,580	75
Trumbull	372	13	4,836	96
Tuscarawas	379	21	7,959	96
Union	321	15	4,815	90
Van Wert	563	16	9,008	90
Vinton	61	18	1,098	92
Warren	347	16	5.552	94
Washington	325	14	4,450	92
Wayne	179	17	3,043	100
Williams	259	18	4,662	96
Wood	517	24	12,408	88
Wyandot	185	16	2,960	99
Average	....	Bus. 16	....	90
Totals	37,149	....	600,398	....

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE, PRODUCT AND CONDITION OF CROPS, OCTOBER 1, 1898—Continued.

Counties.	Corn.		Potatoes.	Tobacco.	Pastures.	Apples.
	Prospect compared with an average.	Time of cutting for fodder—Days after Sept. 1.	Probable total yield compared with an average.	Condition compared with an average.	Condition compared with an average.	Prospect compared with an average.
	Per ct.	Days.	Per ct.	Per ct.	Per ct.	Per ct.
Adams	98	13	37	90	98	5
Allen	93	12	64	....	84	4
Ashland	95	17	70	....	91	26
Ashtabula	102	16	91	....	91	20
Athens	100	10	50	....	100	20
Auglaize	93	10	50	90	83	5
Belmont	102	11	65	100	100	14
Brown	96	19	49	95	98	15
Butler	97	17	59	97	101	3
Carroll	88	15	43	....	68	15
Champaign	95	12	45	95	95	10
Clark	98	12	60	100	83	7
Clermont	89	17	49	94	89	11
Clinton	102	12	64	94	102	10
Columbiana	97	17	71	....	95	26
Coshocton	102	28	56	....	99	22
Crawford	92	11	66	....	98	15
Cuyahoga	102	9	82	....	88	21
Darke	92	12	48	97	93	3
Defiance	94	12	66	100	94	15
Delaware	95	13	41	....	74	25
Erie	101	14	81	....	100	16
Fairfield	79	11	34	....	94	6
Fayette	96	8	33	....	101	6
Franklin	89	12	50	....	90	15
Fulton	102	7	75	....	93	10
Gallia	99	13	56	85	91	8
Geauga	105	13	77	....	97	23
Greene	90	13	68	97	93	5
Guernsey	104	14	72	110	100	25
Hamilton	89	14	56	110	107	7
Hancock	82	8	53	....	104	7
Hardin	101	8	51	....	89	12
Harrison	101	14	53	....	103	22
Henry	97	6	67	....	89	2
Highland	93	14	59	90	88	8
Hocking	100	20	55	....	103	18
Holmes	100	12	82	100	90	22
Huron	103	13	73	....	101	15
Jackson	106	10	56	....	98	27
Jefferson	104	13	56	....	101	25
Knox	102	14	66	....	93	19
Lake	98	16	75	....	100	12
Lawrence	100	19	50	97	91	4
Licking	94	9	55	....	82	24
Logan	97	10	55	....	98	9
Lorain	98	17	75	....	101	7
Lucas	105	4	68	....	60	10
Madison	87	8	64	....	97	16
Mahoning	103	19	66	....	98	26
Marion	99	7	73	....	87	16
Medina	99	14	74	100	89	12
Meigs	101	11	58	....	98	10
Mercer	100	12	53	....	97	2
Miami	90	10	65	96	100	12
Monroe	89	4	75	102	94	11
Montgomery	80	6	50	92	90	5
Morgan	84	15	65	80	103	12
Morrow	101	13	55	100	93	9
Muskingum	88	13	59	100	95	22
Noble	88	10	82	100	103	20
Ottawa	90	8	93	....	103	5
Paulding	83	11	48	....	92	8

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE, PRODUCT AND CONDITION OF CROPS, OCTOBER 1, 1898.—Concluded.

Counties.	Corn.		Potatoes.	Tobacco.	Pastures.	Apples.
	Prospect compared with an average.	Time of cutting for fodder—Days after Sept. 1.	Probable total yield compared with an average.	Condition compared with an average.	Condition compared with an average.	Prospect compared with an average.
	Per ct.	Days.	Per ct.	Per ct.	Per ct.	Per ct.
Perry	88	13	38	....	94	3
Pickaway	69	28	52	....	85	6
Pike	88	14	50	....	92	21
Portage	103	18	82	....	103	23
Preble	96	15	59	95	105	11
Putnam	82	8	55	....	91	3
Richland	97	14	80	100	90	7
Ross	94	12	38	....	99	6
Sandusky	92	7	78	....	96	8
Scioto	95	18	59	....	95	18
Seneca	92	9	95	....	82	7
Shelby	76	15	52	96	82	2
Stark	97	17	69	....	92	20
Summit	94	17	79	....	93	26
Trumbull	99	15	79	....	97	25
Tuscarawas	105	15	46	....	99	35
Union	98	14	51	....	78	18
Van Wert	80	12	48	....	92	2
Vinton	98	9	51	....	93	1
Warren	99	16	76	98	101	3
Washington	95	10	64	85	98	11
Wayne	98	10	79	90	96	22
Williams	100	8	47	....	95	15
Wood	81	11	61	....	95	7
Wyandot	99	8	64	....	89	20
Average per cent	95	Sept. 13	61	94	94	14

ACREAGE AND CONDITION OF CROPS NOVEMBER 1, 1898.

The following report is the result of deductions from the monthly returns of the regular crop correspondents of the Department. For acreage of wheat, barley and rye comparison is made with the acreage seeded last fall, as returned by township assessors to the respective county auditors, and by them, according to law, to the Agricultural Department of the State:

WHEAT —Area sown last fall	2,681,981 acres.
“ Area sown this fall compared with last year	104 per cent.
“ Total estimated area for the harvest of 1899	2,800,152 acres.
“ Condition compared with an average	102 per cent.
“ Average date of seeding	September 21.
“ Condition of soil at time of seeding	Good.
BARLEY—Area sown for harvest of 1898	22,051 acres.
“ Condition compared with an average	99 per cent.
RYE — Area sown last fall	37,149 acres.
“ Sown this fall compared with last year	95 per cent.
“ Total estimated area for harvest of 1899	35,423 acres.
CORN — Prospect compared with an average	95 per cent.
BUCKWHEAT — Prospect compared with an average	84 per cent.
CLOVER SEED — Prospect compared with an average	30 per cent.
POTATOES — Estimated average product per acre	66 bushels.
“ Affected by rot	4 per cent.
APPLES — Product compared with an average	11 per cent.
HOGS — Condition compared with an average	93 per cent.
“ Number to be fattened compared with last year	91 per cent.
COMMERCIAL FERTILIZERS — Farmers using on wheat	35 per cent.

The acreage of wheat seeded for the harvest of 1899 is the largest for a number of years, larger by about 400,000 acres than the area of last year. Generally speaking for the State, the plant is in good condition with the fields well and evenly covered. There is considerable complaint of fly and grub working on some of the early sown, and damage will likely accrue from this cause. Frosts the latter part of the month it is hoped has checked the ravages of the pests. Conditions are fair for wheat going into winter in good form.

Corn is not yielding up to the earlier estimates made. There is considerable that is poor in quality and not in condition to crib until sorted, being moldy and affected with dry rot. In some of the heavy corn growing counties, it is reported that about one-fifth of the corn is thrown out as unfit to go into the crib. This culled out corn is being fed, but where hog cholera prevails, farmers fear evil results from its feeding and are careful.

Potatoes are a poor yield and poor in quality. The average estimated yield is but sixty-six bushels per acre and affected by rot to the extent of four per cent.

Apples, as previously reported, are almost a total failure.

In the tobacco districts the crop has been well cared for and is cured up in fine condition. — There continues to be great prevalence of hog cholera, in some counties to an alarming extent, the losses being quite severe.— The weather has been favorable to pastures, which continue luxuriant and stock may feed for sometime or until freezing and snow.

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND CONDITION OF CROPS, NOVEMBER 1, 1898.

Counties.	Wheat.					
	Area sown last fall.	Area sown this fall compared with last year.	Estimated area for the harvest of 1899.	Condition compared with an average.	When sown, days after Sept. 1.	Condition of soil at time of seeding.
	Acres.	Per cent.	Acres.	Per cent.	—	—
Adams	25,896	99	25,637	98	35	good
Allen	29,581	105	31,060	110	18	"
Ashland	35,969½	102	36,689	102	20	"
Ashtabula	13,554	98	13,283	102	14	"
Athens	14,309	105	15,024	94	29	"
Auglaize	37,128	102	37,871	105	26	"
Belmont	28,123	104	29,248	99	25	"
Brown	28,323	105	29,739	88	27	"
Butler	57,865	106	61,337	99	20	"
Carroll	17,012	100	17,012	92	17	"
Champaign	43,336	107	46,370	115	22	"
Clark	41,120	106	43,587	108	23	"
Clermont	19,981	108	21,579	105	31	"
Clinton	37,820	105	39,711	106	23	"
Columbiana	23,824	100	23,824	102	19	"
Coshocton	32,169½	104	33,456	93	21	"
Crawford	27,653	98	27,100	99	18	"
Cuyahoga	10,656	99	10,549	96	20	"
Darke	67,373	107	72,089	96	20	"
Defiance	24,201	109	26,379	109	19	"
Delaware	22,062	110	24,268	102	22	"
Erie	19,628	106	20,806	104	21	"
Fairfield	47,443	105	49,815	98	12	"
Fayette	48,238	105	50,650	110	25	"
Franklin	46,087	103	47,470	110	23	"
Fulton	24,504	112	27,444	110	17	"
Gallia	22,404	102	22,852	92	35	"
Geauga	10,443	100	10,443	102	13	"
Greene	52,353	106	55,490	103	19	"
Guernsey	21,612	108	23,341	96	16	"
Hamilton	15,819	100	15,819	101	29	"
Hancock	47,669	110	52,436	106	15	"
Hardin	27,884	112	31,230	105	19	"
Harrison	13,947	100	13,947	105	16	"
Henry	36,982	106	39,201	102	18	"
Highland	48,095	104	50,019	106	21	"
Hocking	34,146	108	36,878	105	20	fair
Holmes	25,980	103	26,759	100	20	good
Huron	30,462	104	31,680	106	20	"
Jackson	14,781	98	14,645	92	21	"
Jefferson	17,004	103	17,514	98	17	"
Knox	55,829	105	58,620	98	20	"
Lake	6,225	101	6,287	100	21	"
Lawrence	9,730	105	10,217	91	36	"
Licking	47,693	102	48,647	103	18	"
Logan	32,139	96	30,853	101	19	"
Lorain	24,266	106	25,722	107	20	"
Lucas	15,388	105	16,157	105	18	"
Madison	39,205	105	41,165	108	21	"
Mahoning	18,539	103	19,095	109	16	"
Marion	21,932	100	21,932	94	21	"
Medina	23,873	103	24,589	110	18	"
Meigs	20,650	101	20,857	91	20	"
Mercer	35,692	107	38,190	107	17	"
Miami	46,458	101	46,923	104	17	"
Monroe	20,874	108	22,544	96	16	"
Montgomery	45,061	100	45,061	98	24	"
Morgan	15,350	103	15,811	84	24	"
Morrow	16,779	109	18,289	105	16	"
Muskingum	32,427	106	34,373	93	22	"
Noble	17,009	101	17,109	89	22	"
Ottawa	20,122	103	20,726	100	18	"
Paulding	16,470¼	106	17,458	110	21	"
Perry	20,215	110	22,237	110	19	"

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND CONDITION OF CROPS, NOVEMBER 1, 1898.— Continued.

Counties.	Wheat.					
	Area sown last fall.	Area sown this fall compared with last year.	Estimated area for the harvest of 1899.	Condition compared with an average.	When sown, days after Sept. 1.	Condition of soil at time of seeding.
	Acres.	Per cent.	Acres.	Per cent.	——	——
Pickaway	57,828	104	60,141	103	22	good
Pike	20,875	104	22,010	94	27	"
Portage	23,926	101	24,165	102	22	"
Preble	49,038	104	51,000	99	23	"
Putnam	43,188	102	44,052	102	17	"
Richland	40,156	105	42,164	106	15	"
Ross	48,988	107	52,417	98	29	"
Sandusky	41,032	106	43,494	101	19	"
Scioto	20,064	110	22,070	97	33	"
Seneca	52,817	105	55,458	102	21	"
Shelby	35,191	100	35,191	105	19	"
Stark	51,085	103	52,618	104	18	"
Summit	29,724	99	29,427	100	17	"
Trumbull	16,829	99	16,661	102	15	"
Tuscarawas	31,022	105	32,373	106	18	"
Union	22,423	103	23,096	110	20	"
Van Wert	34,534	105	36,261	110	18	"
Vinton	10,901	101	11,010	102	18	"
Warren	35,694	106	37,836	103	24	"
Washington	30,115	106	31,922	93	31	"
Wayne	50,254	99	49,751	99	25	"
Williams	20,419	110	22,461	125	16	"
Wood	42,218	111	46,862	106	20	"
Wyandot	28,267½	108	30,529	106	18	"
Averages	....	104	....	102	21	....
Totals	2,681,981	....	2,800,152	....	....	....

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND CONDITION OF CROPS, NOVEMBER 1, 1898 — Continued.

Counties.	Barley.	
	Area sown for harvest of 1898.	Condition compared with an average.
	Acres.	Per cent.
Adams	....	....
Allen	146½	98
Ashland	196	80
Ashtabula	102	100
Athens	....	....
Auglaize	75	100
Belmont	157	100
Brown	....	....
Butler	804	95
Carroll	8	98
Champaign	57	100
Clark	13	98
Clermont	....	... .
Clinton	26	92
Columbiana	42	96
Coshocton	8	98
Crawford	204	100
Cuyahoga	8	100
Darke	609	110
Defiance	986	100
Delaware	54	95
Erie	552	101
Fairfield	45	105
Fayette	2	96
Franklin	31	98
Fulton	580	100
Gallia	1	100
Geauga	19	100
Greene	35	100
Guernsey	49	80
Hamilton	1,397	100
Hancock	258	100
Hardin	14	98
Harrison	258	90
Henry	1,753	100
Highland	10	100
Hocking	....	....
Holmes	39	100
Huron	359	101
Jackson	....	....
Jefferson	71	100
Knox	10	98
Lake	31	100
Lawrence	8	100
Licking	50	102
Logan	87	100
Lorain	69	101
Lucas	439	100
Madison	34	101
Mahoning	21	103
Marion	11	100
Medina	93	100
Meigs	23	101
Mercer	295	100
Miami	157	102
Monroe	6	100
Montgomery	149	103
Morgan	....	....
Morrow	5	100
Muskingum	16	101
Noble	4	100
Ottawa	2,037	98
Paulding	2,076	88

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND CONDITION OF CROPS, NOVEMBER 1, 1898 — Continued.

Counties.	Barley.	
	Area sown for harvest of 1898.	Condition compared with an average.
	Acres.	Per cent.
Perry		
Pickaway		
Pike	24	100
Portage	20	90
Preble	57	100
Putnam	1,613	100
Richland	201	105
Ross	2	98
Sandusky	148	98
Scioto	6	101
Seneca	87	100
Shelby	155	101
Stark	16	100
Summit	28	100
Trumbull	10	99
Tuscarawas	23	99
Union	26	101
Van Wert	1,454	110
Vinton	12	98
Warren	237	101
Washington		
Wayne	99	100
Williams	1,007	100
Wood	2,223	95
Wyandot	13	103
Averages		99
Totals	22,051	

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND CONDITION OF CROPS, NOVEMBER 1, 1898—Continued.

Counties.	Rye.			Corn.	Buck-wheat.	Clover Seed.
	Area sown last fall.	Sown this fall compared with last year.	Estimated area for the harvest of 1899.	Prospect compared with an average.	Prospect compared with an average.	Prospect compared with an average.
	Acres.	Per ct.	Acres.	Per ct.	Per ct.	Per ct.
Adams	590	90	531	93	....	23
Allen	159	90	143	105	....	30
Ashland	360½	90	324	83	88	11
Ashtabula	922	93	857	102	71	48
Athens	40	90	36	102	100	54
Auglaize	415	90	364	77	....	21
Belmont	217	96	208	108	98	34
Brown	1,672	99	1,655	97	85	62
Butler	90	100	90	92	80	19
Carroll	224	95	203	102	63	27
Champaign	280	100	280	82	....	10
Clark	348	100	348	104	75	23
Clermont	1,100	100	1,100	90	82	75
Clinton	383	97	372	99	90	23
Columbiana	245	96	235	106	72	25
Coshocton	838	93	779	103	79	47
Crawford	171	100	171	95	100	16
Cuyahoga	539	95	512	110	80	50
Darke	790	96	758	86	82	25
Defiance	231	97	224	91	86	37
Delaware	296	95	281	91	94	30
Erie	406	98	398	102	80	32
Fairfield	470	100	470	95	100	18
Fayette	234	95	194	90	75	15
Franklin	506	100	506	89	90	20
Fulton	497	95	422	90	72	30
Gallia	313	97	304	99	90	29
Geauga	224	97	217	102	70	40
Greene	708	90	637	92	....	35
Guernsey	311	96	299	104	86	66
Hamilton	896	96	860	84	....	58
Hancock	267	96	256	82	80	20
Hardin	191	100	191	102	77	32
Harrison	78	100	78	106	....	18
Henry	2,832	96	2,719	77	80	18
Highland	1,076	93	1,001	92	77	24
Hocking	157	100	157	105	75	25
Holmes	447	99	443	100	82	23
Huron	209	98	205	104	77	25
Jackson	30	100	30	98	60	....
Jefferson	44	120	53	110	103	20
Knox	766	97	743	108	97	16
Lake	669	94	629	92	100	75
Lawrence	85	92	78	94	100	62
Licking	1,748	96	1,678	95	86	25
Logan	437	92	402	96	82	26
Lorain	181	95	172	100	85	42
Lucas	843	96	809	95	82	40
Madison	303	95	288	100	100	18
Mahoning	300	100	300	101	80	58
Marion	83	100	83	87	88	21
Medina	369	95	349	99	77	23
Meigs	239	96	229	90	93	87
Mercer	564	90	508	92	88	52
Miami	228	90	205	93	90	26
Monroe	453	100	453	104	103	35
Montgomery	135	90	121	96	95	48
Morgan	68	89	61	80	87	24
Morrow	407	97	395	100	83	24
Muskingum	558	90	502	95	75	19
Noble	80	100	80	84	83	53
Ottawa	442	100	442	98	102	38

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND CONDITION OF CROPS, NOVEMBER 1, 1898—Continued.

Counties.	Rye.			Corn.	Buck-wheat.	Clover Seed.
	Area sown last fall.	Sown this fall compared with last year.	Estimated area for the harvest of 1899.	Prospect compared with an average.	Prospect compared with an average.	Prospect compared with an average.
	Acres.	Per ct.	Acres.	Per ct.	Per ct.	Per ct.
Paulding	577¼	89	514	85	70	31
Perry	145	79	115	93	93	34
Pickaway	377	90	339	95	90	10
Pike	220	100	220	94	100	23
Portage	363	90	328	98	84	19
Preble	240	100	240	89	80	37
Putnam	498	100	498	85	74	24
Richland	583	96	560	99	70	23
Ross	285	96	274	82	80	27
Sandusky	354	100	354	93	90	18
Scioto	136	100	136	100	98	42
Seneca	191	95	181	95	80	18
Shelby	354	90	319	90	80	18
Stark	375	95	356	102	95	17
Summit	179	95	170	95	93	22
Trumbull	372	95	353	96	82	36
Tuscarawas	379	97	368	99	60	20
Union	321	98	315	98	60	18
Van Wert	563	98	552	80	75	11
Vinton	61	100	61	101	80	10
Warren	347	96	333	93	87	21
Washington	325	100	325	89	100	20
Wayne	179	98	175	97	76	17
Williams	259	98	254	87	80	30
Wood	547	90	465	80	93	53
Wyandot	185	97	180	99	74	29
Averages		95		95	84	30
Totals	37,149		35,423			

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND CONDITION OF CROPS, NOVEMBER 1, 1898.— Continued.

Counties.	Potatoes.		Apples.	Hogs.		Com. Fertilizer.
	Average product per acre.	Affected by rot.	Product compared with an average.	Condition compared with an average.	Number to be fattened compared with last year.	Farmers using on wheat.
	Bushels.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Adams	42	5	5	97	94	76
Allen	115	1	5	105	100	4
Ashland	70	12	5	91	90	58
Ashtabula	109	12	15	92	92	83
Athens	38	2	12	98	96	85
Auglaize	28	....	2	97	100	46
Belmont	54	2	13	99	98	48
Brown	37	2	8	98	91	50
Butler	37	1	50	75	67	32
Carroll	77	3	37	82	72	92
Champaign	15	....	10	77	82	25
Clark	44	....	5	96	88	13
Clermont	47	....	3	102	95	41
Clinton	62	8	6	97	85	27
Columbiana	66	2	34	96	97	65
Coshocton	52	1	19	100	97	44
Crawford	82	4	12	80	79	27
Cuyahoga	81	4	14	80	86	88
Darke	52	2	3	75	77	13
Defiance	74	3	9	97	97	4
Delaware	48	3	11	96	102	41
Erie	107	9	11	89	85	49
Fairfield	57	2	6	102	108	46
Fayette	28	3	8	95	91	58
Franklin	37	2	10	95	98	19
Fulton	69	15	11	87	85	7
Gallia	60	4	8	92	83	82
Geauga	107	13	12	100	100	74
Greene	92	8	....	93	100	17
Guernsey	39	5	21	98	92	71
Hamilton	80	7	6	95	96	42
Hancock	58	4	6	100	95	3
Hardin	73	5	10	68	59	2
Harrison	40	2	12	100	90	31
Henry	66	7	4	90	92	1
Highland	46	6	7	85	81	62
Hocking	40	5	2	100	100	90
Holmes	76	2	26	97	97	62
Huron	100	1	12	97	93	71
Jackson	63	8	32	85	95	87
Jefferson	85	10	18	97	108	72
Knox	73	6	12	100	96	58
Lake	84	1	13	100	92	37
Lawrence	67	5	4	87	81	40
Licking	54	3	16	98	96	42
Logan	30	4	6	87	80	25
Lorain	87	7	4	98	90	83
Lucas	76	2	7	98	93	15
Madison	42	2	8	96	90	2
Mahoning	65	9	18	95	102	79
Marion	48	1	12	91	85	4
Medina	92	2	12	97	99	95
Meigs	61	3	15	98	102	85
Mercer	70	7	....	88	97	7
Miami	74	2	10	94	102	25
Monroe	48	4	14	99	90	83
Montgomery	65	6	10	83	90	33
Morgan	43	6	8	95	89	73
Morrow	62	1	13	98	89	62
Muskingum	62	10	13	97	103	87
Noble	51	3	12	93	91	62
Ottawa	68	4	5	100	100	1
Paulding	85	1	10	78	77	1

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND CONDITION OF CROPS, NOVEMBER 1, 1898.—Concluded.

Counties.	Potatoes.		Apples.	Hogs.		Com. Fertilizer.
	Average product per acre.	Affected by rot.	Product compared with an average.	Condition compared with an average.	Number to be fattened compared with last year.	Farmers using on wheat.
	Bushels.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Perry	70	4	17	98	75	98
Pickaway	51	1	3	96	96	28
Pike	56	3	11	88	98	72
Portage	130	8	16	98	102	84
Preble	49	3	12	90	97	89
Putnam	59	2	1	79	80	1
Richland	81	3	9	84	84	54
Ross	44	2	7	83	79	61
Sandusky	108	6	9	96	96	12
Scioto	67	3	7	98	99	86
Seneca	72	6	22	89	87	34
Shelby	70	3	2	92	75	39
Stark	104	5	17	100	99	37
Summit	125	4	15	91	88	44
Trumbull	112	5	19	98	96	90
Tuscarawas	103	8	22	99	98	46
Union	32	3	11	82	77	4
Van Wert	62	3	7	93	97	20
Vinton	53	2	7	101	98	91
Warren	53	6	4	95	99	58
Washington	62	2	6	98	86	79
Wayne	90	1	19	99	101	54
Williams	62	3	10	103	70	2
Wood	70	5	8	98	96	24
Wyandot	74	5	10	93	93	8
Averages	66	4	11	93	91	35

ACREAGE AND PRODUCT OF CORN AND POTATOES, AND THE CONDITION OF OTHER CROPS,

DECEMBER 1, 1898.

The following report presents careful estimates of the crops named, calculation being based on the monthly returns received from the regular township crop correspondents for the Department. Nearly every township of the State was represented in the returns:

WHEAT —	Condition compared with an average	100 per cent.
"	Crop of 1898 sold as soon as threshed	31 per cent.
"	Damage to growing crop by Hessian fly	4 per cent.
"	Damage to growing crop by white grub worm	2 per cent.
CORN —	Estimated area for 1898	2,954,564 acres.
"	Estimated average yield per acre	38 bushels.
"	Total estimated product for 1898	111,354,701 bu.
"	Cut up for fodder	83 per cent.
"	Put into silo	3 per cent.
"	Average date cribbing began	October 13.
CLOVER —	Area sown in 1897 cut for seed	14 per cent.
"	Average yield of seed per acre	1½ bushels.
APPLES —	Total yield compared with an average	9 per cent.
POTATOES —	Estimated area for 1898	117,341 acres.
"	Average yield per acre	70$\frac{3}{10}$ bushels.
"	Total estimated product for 1898	8,254,121 "
TOBACCO —	Estimated product per acre	832 pounds.
CATTLE —	Being fed for spring market compared with last year	82 per cent.
SHEEP —	Being fed for mutton compared with last year	82 per cent.

Wheat condition is estimated at 100 per cent. compared with a fair average. This is a decline of two points as compared with the estimate of November 1, and is occasioned, no doubt, by the damage of fly and grub worm, which are very generally reported as having been at work on the plant. Wheat was sown under favorable conditions, but was attacked by fly and grub. In some localities the ravages have been more severe than in others, and in the more severely attacked fields there are yellow and apparently dead patches. With this exception, the wheat goes into winter in good condition, and the damage reported from fly and grub may, under favorable conditions, be overcome.

The area planted to corn was about the same in amount as that of 1897, perhaps a slight increase, but the product for the State is considerably greater, averaging 38 bushels per acre against about 34 bushels last year, and while the yield has not been extra large in some limited sections, the total yield is among the largest for the State, excelling last year by several millions of bushels, and as compared with a series of years being next in importance to the great crop of 1896. The quality of the crop is not all prime. There was considerable affected by mold and rot, and consequently not fit for cribbing. The culled corn is being fed.

The area in potatoes was about the same as last year, but the total product shows an increase, though the crop is not much above half a good average one for the State, making two continuous short potato crops. The average product per acre of the present crop is 70 bushels. The distribution is very uneven, ranging from as low as 31 bushels per acre to as high as 130 bushels per acre, the highest product being shown in Portage and Sandusky counties, where the crop is of considerable importance.

The clover seed crop was very light. Only a small amount was cut for seed. In many instances threshing was discontinued when found the yield was so small and the quality of seed so poor.

Live stock, with the exception of hogs, are in good condition. Hog cholera is reported from nearly every quarter of the State, and in some of the heavy hog growing counties losses have been quite severe.

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND PRODUCT OF CORN AND POTATOES, AND THE CONDITION OF OTHER CROPS, DECEMBER 1, 1898.

Counties.	Wheat.			
	Condition compared with an average.	Crop of 1898 sold as soon as threshed.	Damage to growing crop by Hessian fly.	Damage to growing crop by white grub worm.
	Per cent.	Per cent.	Per cent.	Per cent.
Adams	98	25	7	2
Allen	100	58	4	3
Ashland	103	15	4	3
Ashtabula	97	20	1	....
Athens	97	37	1	3
Auglaize	100	....	3	4
Belmont	93	1	8	5
Brown	101	....	5	1
Butler	100	26	7	1
Carroll	92	....	10	5
Champaign	104	38	5	....
Clark	100	52	4	1
Clermont	95	22	8	....
Clinton	104	56	8	4
Columbiana	102	17	3	1
Coshocton	96	15	5	10
Crawford	98	28	5	7
Cuyahoga	101	16	2	1
Darke	97	48	5	3
Defiance	108	32	2	....
Delaware	110	36	2	1
Erie	103	35	4	....
Fairfield	98	41	6	3
Fayette	110	55	5	1
Franklin	110	40	3	....
Fulton	112	38	3	2
Gallia	95	34	3	7
Geauga	95	30	6	1
Greene	96	25	3	1
Guernsey	95	19	7	4
Hamilton	102	47	3	1
Hancock	106	30	2	....
Hardin	104	4	1	....
Harrison	108	25	....	....
Henry	112	38	5	....
Highland	105	20	6	4
Hocking	100	22	7	2
Holmes	96	27	5	6
Huron	109	31	4	....
Jackson	95	20	5	2
Jefferson	94	18	5	3
Knox	105	28	1	1
Lake	97	45	2	....
Lawrence	102	50	4	1
Licking	97	27	4	5
Logan	103	47	5	1
Lorain	101	22	1	....
Lucas	105	39	4	....
Madison	105	71	4	1
Mahoning	95	15	1	....
Marion	94	46	4	3
Medina	103	17	2	....
Meigs	101	31	3	6
Mercer	106	33	1	2
Miami	97	35	6	1
Monroe	87	10	3	3
Montgomery	97	28	15	....
Morgan	90	24	5	6
Morrow	102	23	1	1
Muskingum	91	31	7	8
Noble	91	27	7	8
Ottawa	100	20	5	....
Paulding	104	48	....	....

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND PRODUCT OF CORN AND POTATOES, AND THE CONDITION OF OTHER CROPS, DECEMBER 1, 1898—Continued.

Counties.	Wheat.			
	Condition compared with an average.	Crop of 1898 sold as soon as threshed.	Damage to growing crop by Hessian fly.	Damage to growing crop by white grub worm.
	Per cent.	Per cent.	Per cent.	Per cent.
Perry	96	11	5	8
Pickaway	100	36	5	1
Pike	91	20	9	8
Portage	102	27	2	....
Preble	106	27	5	2
Putnam	100	67	....	3
Richland	94	25	4	5
Ross	99	45	4	1
Sandusky	98	21	2	....
Scioto	90	24	4	10
Seneca	102	25	2	1
Shelby	101	30	5	....
Stark	94	24	2	1
Summit	96	29	2	1
Trumbull	98	21	7	1
Tuscarawas	103	30	5	4
Union	112	32	1	....
Van Wert	112	44	3	....
Vinton	102	21	7	6
Warren	104	16	5	2
Washington	96	21	1	8
Wayne	94	18	3	1
Williams	102	45	3	....
Wood	105	57	3	....
Wyandot	105	49	2	1
Average	100	31	4	2

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND PRODUCT OF CORN AND POTATOES AND THE CONDITION OF OTHER CROPS, DECEMBER 1, 1898 — Continued.

Counties.	Corn.					
	Estimated area for 1898.	Estimated average yield per acre.	Total estimated product for 1898.	Cut up for fodder.	Put into silo.	Date cribbing began, days after Oct. 1.
	Acres.	Bush.	Bushels.	Per ct.	Per cent.	
Adams	30,996	31	960,876	91	......	27
Allen	35,419	39	1,381,341	92	......	14
Ashland	24,311	36	875,196	95	4	14
Ashtabula	15,725	41	644,725	70	11	9
Athens	16,190	35	566,650	100	4	3
Auglaize	43,436	39	1,694,004	91	......	9
Belmont	26,480	35	926,800	86	5	12
Brown	47,297	36	1,582,692	81	......	20
Butler	49,260	40	1,970,400	38	3	24
Carroll	14,447	44	635,668	84	.....	8
Champaign	51,003	42	2,142,126	82	......	3
Clark	47,403	42	1,990,926	84	1	16
Clermont	33,626	33	1,109,658	85	4	17
Clinton	60,781	38	2,309,678	75	1	12
Columbiana	18,451	39	719,589	99	5	10
Coshocton	25,307	40	1,012,280	97	6	16
Crawford	34,356	42	1,442,952	95	......	8
Cuyahoga	9,611	31	297,941	74	18	7
Darke	78,943	43	3,394,549	66	1	11
Defiance	29,118	39	1,135,602	93	......	10
Delaware	41,139	38	1,563,282	95	3	10
Erie	16,014	40	640,560	92	4	5
Fairfield	41,693	39	1,626,027	94	......	18
Fayette	61,947	39	2,415,933	91	......	10
Franklin	56,350	39	2,197,650	94	......	19
Fulton	26,211	37	969,807	85	......	1
Gallia	26,009	36	936,324	94	.....	11
Geauga	10,179	39	396,981	78	7	7
Greene	57,127	34	1,942,318	80	10	12
Guernsey	21,369	39	833,391	95	......	9
Hamilton	15,421	41	632,261	66	5	21
Hancock	49,627	33	1,637,691	97	......	7
Hardin	38,095	39	1,485,705	94	......	13
Harrison	12,816	42	538,272	95	5	7
Henry	51,452	40	2,058,080	93	......	1
Highland	53,191	37	2,068,067	91	4	15
Hocking	27,892	32	892,544	99	.....	15
Holmes	23,101	41	947,141	77	.....	14
Huron	29,781	39	1,161,459	87	5	8
Jackson	11,867	31	367,877	95	......	8
Jefferson	14,233	42	597,786	90	7	5
Knox	30,805	37	1,139,785	98	....	5
Lake	6,462	33	212,322	93	7	1
Lawrence	18,348	35	642,180	96	1	22
Licking	47,785	37	1,754,045	95	4	14
Logan	33,326	41	1,366,366	94	4	14
Lorain	20,162	39	786,318	95	3	11
Lucas	19,449	37	719,613	89	.....	7
Madison	78,965	34	2,684,810	79	......	8
Mahoning	15,095	34	513,230	58	11	14
Marion	43,659	42	1,833,678	84	1	14
Medina	19,345	41	793,145	93	1	8
Meigs	17,324	36	623,664	98	......	8
Mercer	47,886	36	1,723,896	78	......	11
Miami	44,677	36	1,608,372	61	2	14
Monroe	19,064	32	610,048	95	.....	15
Montgomery	49,151	42	2,064,342	80	......	18
Morgan	16,755	32	536,160	95	......	12
Morrow	29,021	38	1,122,798	99	......	12
Muskingum	29,124	38	1,106,712	98	10	13
Noble	17,974	33	593,142	82	.....	10
Ottawa	14,082	35	492,870	95	.....	1
Paulding	35,352	42	1,484,784	81	.....	21

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND PRODUCT OF CORN AND POTATOES, AND THE CONDITION OF OTHER CROPS, DECEMBER 1, 1898.—Continued.

Counties.	Corn.					
	Estimated area for 1898.	Estimated average yield per acre.	Total estimated product for 1898.	Cut up for fodder.	Put into silo.	Date cribbing began, days after Oct. 1.
	Acres.	Bush.	Bushels.	Per ct.	Per cent.	
Perry	18,486	36	665,496	100	......	12
Pickaway	70,435	40	2,817,400	96	.....	15
Pike	25,258	34	858,772	74	......	21
Portage	17,645	42	741,090	86	5	16
Preble	50,809	34	1,727,506	56	......	19
Putnam	57,894	42	2,431,548	85	20	10
Richland	30,519	42	1,281,798	95	5	15
Ross	63,730	33	2,103,090	86	......	17
Sandusky	31,961	36	1,150,596	75	......	7
Scioto	22,714	36	817,704	82	......	18
Seneca	46,680	34	1,587,120	93	5	11
Shelby	38,132	32	1,220,224	82	2	16
Stark	30,770	43	1,323,110	97	3	13
Summit	18,695	43	803,885	84	18	11
Trumbull	16,196	38	615,448	84	7	9
Tuscarawas	23,419	42	983,598	95	3	13
Union	51,421	36	1,851,156	84	5	11
Van Wert	46,687	32	1,493,984	84	5	7
Vinton	12,972	32	415,104	96	......	15
Warren	45,038	39	1,756,482	64	5	14
Washington	25,404	32	812,928	99	3	9
Wayne	35,441	41	1,453,081	93	6	12
Williams	28,951	40	1,158,160	86	3	4
Wood	77,205	36	2,779,380	49	2	17
Wyandot	36,604	38	1,390,952	93	......	7
Averages	... .	38	... .	83	3	Oct. 13
Totals	2,954,564	....	111,354,701	....	......	

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND PRODUCT OF CORN AND POTATOES, AND THE CONDITION OF OTHER CROPS, DECEMBER 1, 1898—Continued.

Counties.	Clover.		Apples.	Potatoes.		
	Area sown in 1897 cut for seed.	Average yield of seed per acre.	Yield compared with an average.	Estimated area for 1898.	Average yield per acre.	Total estimated product for 1898.
	Per ct.	Bush.	Per ct.	Acres.	Bush.	Bushels.
Adams	11	1.00	3	174	51	8,874
Allen	3	.75	5	743	45	33,435
Ashland	5	1.25	12	970	96	93,120
Ashtabula	25	1.25	18	3,152	102	321,504
Athens	10	2.00	12	557	54	30,088
Auglaize	23	1.00	10	998	58	57,884
Belmont	25	2.00	11	902	51	46,002
Brown	7	1.00	7	872	36	31,392
Butler	18	.75	9	1,175	42	49,350
Carroll	1	1.50	12	710	50	35,500
Champaign	20	1.50	6	509	40	20,360
Clark	37	1.00	4	735	49	29,015
Clermont	3	1.75	2	1,600	41	65,600
Clinton	15	1.00	3	582	54	31,428
Columbiana	9	1.75	23	1,627	71	115,517
Coshocton	4	1.00	17	995	56	55,720
Crawford	4	.75	8	975	63	61,425
Cuyahoga	2	2.00	14	6,139	89	546,371
Darke	10	1.25	2	1,792	56	100,352
Defiance	14	1.75	6	928	74	68,672
Delaware	8	1.00	15	597	47	28,059
Erie	8	1.50	8	2,555	100	255,500
Fairfield	14	1.00	15	1,080	46	54,280
Fayette	31	1.50	7	138	30	4,140
Franklin	12	1.50	8	3,261	31	101,091
Fulton	20	.75	5	1,220	68	82,960
Gallia	21	2.00	7	451	56	25,256
Geauga	10	2.00	14	2,741	89	141,949
Greene	3	1.75	2	874	40	34,960
Guernsey	20	2.25	20	497	75	37,275
Hamilton	7	2.00	5	5,226	39	203,814
Hancock	7	.75	4	1,269	62	78,678
Hardin	20	1.50	3	1,342	59	79,178
Harrison	20	2.00	12	343	35	12,005
Henry	35	1.00	5	1,537	75	115.275
Highland	15	1.50	5	365	53	19,345
Hocking	3	.75	11	786	45	35,370
Holmes	10	1.00	26	878	62	54,436
Huron	9	1.00	3	1.467	97	142,299
Jackson	....	....	20	162	50	8,100
Jefferson	5	1.00	11	791	47	37,177
Knox	5	1.00	7	682	60	40,920
Lake	10	2.00	13	1,514	85	128,690
Lawrence	2	1.00	9	376	48	18,048
Licking	20	1.50	14	1,446	58	83,868
Logan	18	1.25	4	619	45	27,855
Lorain	12	1.25	4	2,271	91	206,661
Lucas	35	1.00	6	3,132	82	256,824
Madison	6	1.25	9	270	50	13,500
Mahoning	10	1.00	19	1,535	79	121,265
Marion	31	1.25	12	864	63	54,432
Medina	4	1.25	6	1,930	105	202,650
Meigs	10	2.00	8	933	64	59,712
Mercer	24	1.00	5	954	56	53,424
Miami	23	.75	8	986	68	67,048
Monroe	5	.75	15	1,271	43	54,653
Montgomery	15	1.50	5	1,634	40	65,360
Morgan	22	1.50	8	559	38	21,242
Morrow	10	1.50	15	1,218	59	71,862
Muskingum	5	.75	10	1,415	56	79,240
Noble	25	1.75	10	575	58	33,350
Ottawa	....	....	2	650	50	32,500
Paulding	30	1.75	4	597	58	34,626

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND PRODUCT OF CORN AND POTATOES, AND THE CONDITION OF OTHER CROPS, DECEMBER 1, 1898—Continued.

Counties.	Clover.		Apples.	Potatoes.		
	Area sown in 1897 cut for seed.	Average yield of seed per acre.	Yield compared with an average.	Estimated area for 1898.	Average yield per acre.	Total estimated product for 1898.
	Per ct.	Bush.	Per ct.	Acres.	Bush.	Bushels.
Perry	39	1.50	6	723	59	42,657
Pickaway	27	.75	2	1,000	51	51,000
Pike	2	1.75	6	510	54	27,540
Portage	5	....	18	5,361	125	670,125
Preble	25	1.00	7	724	51	36,924
Putnam	8	1.75	....	1,176	40	47,040
Richland	40	2.00	8	2,357	66	155,562
Ross	10	1.00	5	793	39	30,927
Sandusky	7	1.50	6	1,817	130	246,210
Scioto	41	.75	8	884	60	53,040
Seneca	18	1.50	20	1,421	75	106,575
Shelby	9	1.00	6	842	61	51,362
Stark	6	1.00	13	3,213	75	240,975
Summit	10	1.75	11	2,608	114	297,312
Trumbull	15	1.50	16	3,694	104	384,176
Tuscarawas	17	1.75	26	2,082	61	127,002
Union	10	.75	13	542	31	16,802
Van Wert	3	1.50	6	681	52	35,412
Vinton	15	1.25	5	515	52	26,780
Warren	5	1.25	4	627	54	33,858
Washington	3	2.00	8	1,813	59	106,967
Wayne	8	.75	15	1,822	104	189,488
Williams	23	1.50	7	1,021	89	90,869
Wood	45	1.25	3	1,139	48	54,672
Wyandot	12	1.00	12	730	69	50,370
Averages	14	1.33	9	....	70.3	....
Totals	....	....	....	117,341	....	8,254,121

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND PRODUCT OF CORN AND POTATOES, AND THE CONDITION OF OTHER CROPS, DECEMBER 1, 1898.—Continued.

Counties.	Tobacco.	Cattle.	Sheep.
	Estimated product per acre.	Being fed for spring market, compared with last year.	Being fed for mutton, compared with last year.
	Pounds.	Per cent.	Percent.
Adams	666	75	93
Allen	....	90	93
Ashland	....	94	99
Ashtabula	....	62	69
Athens	....	90	100
Auglaize	....	71	67
Belmont	933	92	72
Brown	950	77	108
Butler	1,000	87	82
Carroll	....	55	56
Champaign	....	100	75
Clark	....	98	98
Clermont	900	98	98
Clinton	706	89	78
Columbiana	....	94	91
Coshocton	....	91	61
Crawford	....	75	71
Cuyahoga	....	23	55
Darke	907	67	53
Defiance	800	86	88
Delaware	....	84	81
Erie	....	88	93
Fairfield	....	84	92
Fayette	....	95	82
Franklin	....	75	80
Fulton	....	100	100
Gallia	900	66	66
Geauga	....	87	75
Greene	400	68	60
Guernsey	....	78	61
Hamilton	900	92	100
Hancock	....	79	81
Hardin	....	55	66
Harrison	....	90	100
Henry	....	68	62
Highland	1,000	79	74
Hocking	....	90	90
Holmes	....	93	76
Huron	....	87	86
Jackson	....	100	100
Jefferson	....	87	77
Knox	....	73	66
Lake	....	87	80
Lawrence	....	84	70
Licking	....	72	79
Logan	....	80	83
Lorain	....	92	82
Lucas	....	95	80
Madison	....	76	66
Mahoning	....	78	58
Marion	....	77	78
Medina	1,000	77	92
Meigs	600	98	99
Mercer	....	100	89
Miami	983	92	80
Monroe	1,000	85	85
Montgomery	800	90	50
Morgan	450	69	80
Morrow	....	79	82
Muskingum	....	76	86
Noble	1,100	79	80
Ottawa	....	....	....
Paulding	....	86	90

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND PRODUCT OF CORN AND POTATOES, AND THE CONDITION OF OTHER CROPS, DECEMBER 1, 1898.—Concluded.

Counties.	Tobacco.	Cattle.	Sheep.
	Estimated product per acre.	Being fed for spring market, compared with last year.	Being fed for mutton, compared with last year.
	Pounds.	Per cent.	Per cent.
Perry		88	88
Pickaway		78	73
Pike		66	75
Portage		100	100
Preble	783	98	100
Putnam		65	85
Richland		69	98
Ross		92	97
Sandusky		91	75
Scioto	600	80	100
Seneca		58	75
Shelby	800	57	75
Stark		72	81
Summit		69	75
Trumbull		90	87
Tuscarawas		96	94
Union		96	87
Van Wert		91	98
Vinton		70	80
Warren	880	100	93
Washington		84	84
Wayne	900	65	91
Williams		97	77
Wood		67	62
Wyandot		81	81
Averages	832	82	82

TABLE SHOWING THE ANNUAL PRODUCTION AND PRICE OF WHEAT AND CORN FOR THE YEARS 1850 TO 1898, INCLUSIVE.

Year.	Bushels of wheat.	Average number of bushels per acre.	Price.		Bushels of corn.	Average number of bushels per acre.	Price.	
			Range.	Average.			Range.	Average.
1850	31,500,000	18.	$0.70 to $1.10	.89	56,619,608	36.8	$0.24 to $0.51	.38
1851	25,309,225	15.2	.58 “ .78	.69	61,271,382	36.7	.30 “ .94	.38
1852	23,043,737	14.1	.59 “ .63	.60	58,165,517	33.6	.25 “ .45	.39
1853	17,118,311	12.	.60 “ .85	.73	73,436,070	40.	.37 “ .55	.42
1854	11,989,110	8.	.85 “ 1.70	1.19	52,171,551	26.	.40 “ .55	.49
1855	19,569,320	13.81	1.10 “ 2.00	1.54	87,587,434	39.7	.55 “ .80	.67
1856	15,333,837	10.2	.90 “ 1.70	1.27	57,802,515	27.7	.32 “ .63	.42
1857	25,397,614	14.	1.00 “ 1.60	1.18	82,555,186	36.6	.48 “ .80	.59
1858	17,655,483	10.4	.67 “ 1.00	.77	50,863,582	27.7	.25 “ .61	.42
1859	13,317,967	7.2	.90 “ 1.70	1.15	68,780,846	29.5	.50 “ .90	.72
1860	23,640,356	13.8	.93 “ 1.38	1.17	91,588,704	38.2	.39 “ .80	.50
1861	20,055,424	11.	.65 “ 1.12	.93	74,858,878	33.5	.28 “ .50	.34
1862	20,764,887	12.	.72 “ 1.00	.86	62,704,887	30.	.27 “ .40	.31
1863	20,452,410	11.36	.82 “ 1.30	1.04	54,614,617	27.	.35 “ .70	.53
1864	15,541,885	9.33	.95 “ 2.12	1.41	54,053,491	27.	.63 “ 1.27	1.03
1865	13,234,139	9.	1.25 “ 2.07	1.78	68,053,668	35.	.56 “ 1.29	.77
1866	5,821,747	4.5	1.75 “ 2 80	2.27	80,386,320	36.5	.45 “ .65	.54
1867	13,350,721	11.51	1.95 “ 3.50	2.79	63,875,064	29.8	.59 “ .98	.79
1868	16,480,059	11.31	1.90 “ 2 65	2.31	76,725,288	34.4	.82 “ 1.08	.92
1869	26,499,729	15.37	1.15 “ 1.98	1.57	62,443,346	28.4	.57 “ 1.10	.73
1870	18,726,341	11.29	1.08 “ 1.33	1.15	88,565,299	37.5	.69 “ 1.05	.83
1871	22,274,378	13.27	1.10 “ 1.55	1.27	98,363,060	36.7	.50 “ .79	.56
1872	18,987,664	11.22	1.13 “ 2.08	1.58	103,058,234	40.9	.44 “ .57	.49
1873	21,974,385	12.61	1.30 “ 1.80	1.56	84.049,328	35.1	.39 “ .50	.42
1874	26,806,818	14.51	1.03 “ 1 60	1.38	101,815,494	39.8	.42 “ .75	.60
1875	17,867,967	9.22	1.03 “ 1.75	1.16	97,825,024	34.1	.58 “ .87	72
1876	15,354,569	10.18	1.00 “ 1.50	1.10	112,552,642	36.8	.40 “ .73	.51
1877	27,306,566	15.63	1.08 “ 2.15	1.41	101,884,305	32.5	.40 “ .57	.46
1878	35,218,783	16.58	.85 “ 1.35	1.11	114,839,107	37.8	.48 “ .49	.42
1879	41,052,120	17 78	.85 “ 1.15	.96	96,908,800	34.	.31 “ .45	.37
1880	48,540,307	17.20	.93 “ 1.37	1.16	105,414,504	38.9	42 “ .51	.42
1881	38,102,633	13.8	.88 “ 1.39	1.10	78,712,796	31.	.40 “ .87	.49
1882	42,112,103	15.59	.95 “ 1.50	1.32	90,869,137	34	.56 “ .87	.72
1883	27,169,738	10.67	.95 “ 1.17	1.05	64,001,618	24.2	.44 “ .76	.54
1884	36,396,119	14.4	.80 “ 1.10	1.01	87,797,813	33.3	.40 “ .62	.53
1885	24,183,430	9.8	.72 “ 1.09	.89	112,192,744	39.	.37 “ .59	.47
1886	37,660,681	14.	.74 “ 1.00	.88	88,818,556	33.5	.32 “ .48	.39
1887	28,400,000	10.4	.71 “ .89	.80	83,118,838	30.5	.34 “ .55	.40
1888	26,160,994	11.7	.71 “ .96	.85	111,155,506	38.9	.44 “ .61	.52

1889	31,663,448	14.6	.73 " 1.15	.93	87,838,192	32.3	.30 " .49	.37
1890	31,509,676	13.8	.75 " 1.02	.83	63,694,215	24.5	.27 " .56	.36
1891	15,063,480	17.5	.82 " 1.16	.99	86,500,000	33.	.49 " .77	.60
1892	40,254,621	14.4	.73 " 1.01	.90	80,802,958	30.8	.39 " .67	.48
1893	46,545,258	17.2	.52 " .93	.64	67,681,125	25.	.37 " .45	.42
1894	50,852,433	20.	.48 " .56	.51	70,712,925	25.	.35 " .59	.45
1895	26,520,930	11.9	.53 " .90	66	96,263,789	33.9	.24 " .56	.41
1896	17,269,545	8.53	.55 " .97	.72	119,517,107	41.	.18 " .33	.27
1897	38,194,086	17.67	.72 " 1.00	.88	93,068,123	33.67	.22 " .34	.28
1898	42,268,161	15.82	.64 " 1.45	.87	111,354,701	38.	.27 " .41	.34

NOTE.—Prices here given relate to the commercial year ending September 1.

TABLE SHOWING THE AVERAGE PRODUCTION AND PRICE OF WHEAT AND CORN BY DECADES.

Decades.	Average bushels of wheat.	Average bushels per acre.	Range of price.	Average price.	Average bushels of corn.	Average bushels per acre.	Range of price.	Average price.
1850 to 1860	20,023,460	12.29	$0 58 to $2 00	$ 1 00	64,920,369	33.4	$0 24 to $0 90	$0 48
1860 to 1870	17,584,085	10.91	60 to 3 50	1 61	68,930,426	32.	27 to 1 29	64
1870 to 1880	24,656,959	13.29	85 to 2 15	1 27	99,986,129	36.5	38 to 1 05	54
1880 to 1890	34,038,945	13.21	71 to 1 50	1 00	90,991,979	33.5	30 to 87	45
Last ten years, 1889 to 1898, inclusive	37,014,164	15.14	48 to 1 45	.79	87,746,313	31.7	18 to 77	40

AVERAGE PRICES OF OTHER FARM PRODUCTS THAN WHEAT AND CORN IN THE LOCAL MARKETS OF OHIO FROM 1855 TO 1898, INCLUSIVE.

Year.	Barley.	Oats.	Rye.	Hay.	Potatoes.
1855	$1 35	$0 29½	$0 70	$14 71	....
1856	1 58	46	91	21 00	....
1857	58	36	58	13 46	....
1858	67	57	82	15 38	....
1859	76	43	86	17 73	....
1860	69	27	56	12 62	....
1861	60	30	48	11 85	....
1862	1 36	58	76	16 34	....
1863	1 51	78½	1 35	27 16	....
1864	1 28	52	1 15	26 00	....
1865	1 41	42	80	12 63	....
1866	1 53	57	1 28	19 76	....
1867	2 11	69	1 62	14 80	....
1868	2 37	64	1 28	16 42	....
1869	1 26	54	92	17 44	....
1870	1 00	46	91	18 45	....
1871	78	37	85	20 79	....
1872	87	36	76	22 18	....
1873	1 51	48	93	17 16	....
1874	1 41	59	1 06	20 98	....
1875	1 20	38	74	17 66	....
1876	90	37	74	11 67	$2 82
1877	52	29	59	9 86	1 44
1878	1 00	27	54	10 79	1 83
1879	89	34	82	15 87	1 16
1880	98	38	1 04	16 36	2 18
1881	1 05	50	94	17 90	3 30
1882	76	39	62	12 39	2 09
1883	76	34	62	11 63	1 47
1884	80	32	63	12 81	1 59
1885	86	30	63	12 16	1 54
1886	61	29	58	11 17	1 69
1887	81	33	62	14 79	2 74
1888	78	26	52	12 74	1 30
1889	57	27	50	10 56	1 67
1890	77	48	81	10 58	2 99
1891	70	33	85	11 25	1 45
1892	69	33	73	11 10	1 75
1893	64	32	55	12 55	2 30
1894	60	35	52	10 95	2 08
1895	56½	27	53	12 70	1 56
1896	34	20	36	12 83	85
1897	34	22	39	11 00	1 35
1898	47	27	51	8 65	1 93
Average	0 96	0 39	0 77	14 93	1 87

Barley, Oats and Rye are rated per bushel; Hay rated per ton; Potatoes rated per barrel.

TABULAR STATEMENT EXHIBITING THE NUMBER OF HORSES, CATTLE, MULES, SHEEP AND HOGS RETURNED BY THE SEVERAL COUNTY AUDITORS, FOR THE YEARS 1897 AND 1898.

COUNTIES.	Number of Horses.		Number of Cattle.		Number of Mules.		Number of Sheep.		Number of Hogs.	
	1897.	1898.	1897.	1898.	1897.	1898.	1897.	1898.	1897.	1898.
Adams	4,670	4,426	7,852	9,114	189	189	7,421	7,997	10,908	14,202
Allen	8,894	8,397	12,345	13,224	103	98	14,365	17,705	20,352	26,638
Ashland	6,698	7,009	11,942	13,392	56	54	27,790	32,885	16,419	20,348
Ashtabula	10,424	9,838	23,961	26,726	42	41	17,797	18,374	5,547	5,072
Athens	4,918	4,637	9,761	11,218	165	170	33,264	40,478	4,715	4,900
Auglaize	8,648	8,101	12,692	13,224	171	148	8,580	9,568	22,982	28,210
Belmont	8,755	8,480	17,429	19,127	375	370	60,908	72,991	12,270	14,551
Brown	7,214	6,567	10,843	10,784	210	213	9,579	12,225	22,370	28,527
Butler	10,841	10,677	13,096	13,711	482	453	5,745	7,482	19,288	25,868
Carroll	4,732	4,599	10,961	11,814	73	62	53.090	60,888	10,139	10,142
Champaign	10,512	10,080	14,058	14,958	153	143	23,322	23,873	25,025	34,408
Clark	11,709	11,371	14,758	15,789	211	299	26,699	27,449	22,947	29,464
Clermont	7,351	6,676	8,950	9,081	604	569	5.629	6.647	16,521	20,921
Clinton	9,576	9,002	12,010	13,386	328	322	19,615	25,474	32,183	37,957
Columbiana	9,494	9,503	18,243	19,456	77	85	30,962	36,705	11,433	12,920
Coshocton	7,018	6,904	13,952	15,823	103	111	71,824	78,952	15,686	17,151
Crawford	8,374	8,537	14,370	15,229	67	79	36,786	42,534	32,509	34,786
Cuyahoga	19,443	18,624	15,642	15,768	85	114	6,055	6,757	2,662	2,627
Darke	14,373	14,590	19,041	20,591	344	317	5,219	6,870	34,423	42,210
Defiance	6,559	6,460	9,299	9,485	82	75	10,926	13,056	11,411	16,233
Delaware	7,578	7,194	13,710	15,766	55	55	39,259	42,646	21,128	26,111
Erie	5,553	5,385	7,057	7,223	17	22	11,343	12,575	8,023	8,205
Fairfield	9,562	10,117	16,400	17,210	129	134	12,714	16,736	30,043	41,284
Fayette	9,600	9,120	15,298	16,931	179	152	11,285	13,117	31,705	41,369
Franklin	15,551	14,697	17,459	17,587	121	131	10,221	11,042	22,639	29,743
Fulton	6,562	7,013	11,029	12,603	18	24	19,490	20,278	17,300	21,821

Gallia	4,968	4,682	8,812	10,328	264	234	13,710	14,788	7,480	9,020
Geauga	5,707	5,351	17,103	18,898	39	32	14,508	14,956	4,076	4,731
Greene	10,532	10,229	13,926	14,804	191	173	14,547	16,860	21,569	32,456
Guernsey	6,390	5,676	12,938	13,737	240	219	60,533	69,769	9,100	9,630
Hamilton	18,782	18,169	18,421	17,665	1,359	1,271	2,033	2,188	10,800	11,884
Hancock	10,612	10,514	18,429	19,716	94	99	30,595	33,086	30,747	43,340
Hardin	7,646	7,361	12,629	13,793	129	101	27,339	32,848	24,793	31,491
Harrison	4,913	4,798	10,642	11,497	49	54	89,339	100,162	7,148	7,741
Henry	6,683	6,481	11,388	11,191	72	67	7,438	8,787	16,778	17,240
Highland	8,518	8,284	14,401	15,639	235	207	17,770	21,075	29,757	37,277
Hocking	3,743	3,404	7,757	7,878	61	53	14,018	15,673	6,169	6,937
Holmes	6,303	6,491	13,234	15,455	86	73	23,737	27,926	20,343	22,716
Huron	8,278	8,171	12,063	13,026	92	95	46,985	53,508	13,629	15,701
Jackson	3,609	3,549	8,672	9,282	795	830	9,031	8,955	4,600	5,411
Jefferson	6,307	6,097	10,479	11,450	188	195	49,064	56,636	8,062	8,488
Knox	8,059	7,730	14,648	15,862	110	115	73,681	84,764	23,111	25,911
Lake	4,560	4,262	6,015	6,444	15	13	6,795	7,377	1,774	1,846
Lawrence	3,668	3,586	7,120	7,642	515	494	3.257	3,128	4,791	5,478
Licking	12,825	12,571	21,233	22,868	116	100	81,652	92,214	30,425	38,247
Logan	8,711	8,695	12,781	15,205	71	81	30,074	31,371	23,835	31,315
Lorain	9,521	9,099	20,262	20,138	41	76	21,677	24,447	7,893	8,955
Lucas	9,202	9,329	7,819	8,189	144	137	2,740	3,191	7,688	9,169
Madison	9,671	9,266	16,448	24,308	234	254	29,586	28,991	32,549	39,594
Mahoning	8,963	8,493	14,858	15,942	75	104	25,143	29,815	8,373	9,087
Marion	7,543	7,534	12,243	13,264	131	114	44,750	54,174	23,395	26,489
Medina	8,086	8,000	14,871	15,631	116	125	30,119	32,415	9,479	11,101
Meigs	5,407	5,345	9,159	10,280	258	222	25,956	28,357	5,205	5,882
Mercer	8 246	8,278	13,455	14,343	122	132	9,419	11,980	26,462	31,420
Miami	11,217	11,450	12,120	12,961	242	234	5.235	4,902	14,318	21,269
Monroe	5,171	4,965	10.440	11,866	77	88	12,536	16 441	6,605	7,119
Montgomery	15,797	16,757	16,048	18,376	240	227	2,685	3,128	17,230	23,871
Morgan	5,087	4,920	11,813	12,371	49	52	51,736	59,079	6,525	7,440
Morrow	7,342	7,200	11,782	13,285	54	62	53,120	60,362	16,357	18,806
Muskingum	10 075	9,739	22,069	22,494	162	171	75,336	83,589	14,817	16,037
Noble	4,532	4,183	11,436	12,613	45	57	41,233	45,822	8,684	10,191
Ottawa	5,333	5,255	7,396	7,491	10	14	4,822	5,148	10,492	10,917
Paulding	4,826	4,286	5,016	4,901	42	41	4,559	6,034	8,009	10,049
Perry	5,973	5,660	11,870	13,039	116	100	24.339	25,817	10,243	12,267
Pickaway	10,283	9,972	17.210	18,244	273	280	8,777	9.471	20,297	30,628
Pike	4,161	4,029	4,595	4,849	207	203	3.896	3,890	6,680	8,877
Portage	8,264	7,961	18,076	19.532	97	91	23,607	26,989	7,409	8,675
Preble	9,498	9,072	13,199	14,072	237	255	5,741	7,190	21,983	33,693
Putnam	8,566	8,433	13,267	14,354	78	50	8,759	10,384	31,582	35,755

TABULAR STATEMENT EXHIBITING THE NUMBER OF HORSES, CATTLE, MULES, SHEEP AND HOGS RETURNED BY THE SEVERAL COUNTY AUDITORS, FOR THE YEARS 1897 AND 1898 — Concluded.

COUNTIES.	Nnmber of Horses.		Number of Cattle.		Number of Mules.		Number of Sheep.		Number of Hogs.	
	1897.	1898.	1897.	1898.	1897.	1898.	1897.	1898.	1897.	1898.
Richland	8,715	8,671	13,291	15,059	147	142	32,842	39,912	21,619	25,656
Ross	11,347	10,934	16,918	17,482	203	149	11,220	12,277	21,579	36,408
Sandusky	8,292	8,325	11,205	12,977	60	53	14,014	19,095	22,255	23,559
Scioto	5,227	5,153	7,678	7,624	774	631	1,727	1,814	6,992	7,677
Seneca	9,505	9,083	15,100	14,215	89	63	30,827	32,726	34,651	40,672
Shelby	8,371	8,467	13,195	13,334	98	89	6,172	7,287	20,320	26,208
Stark	14,728	14,218	24,048	25,383	319	327	23,453	26,230	24,276	26,341
Summit	9,444	9,247	17,644	19,287	94	88	8,871	9,986	9,689	11,056
Trumbull	11,247	10,659	26,897	29,374	57	98	26,922	29,893	6,953	7,523
Tuscarawas	7,945	7,872	18,796	19,579	130	113	28,681	32,639	15,729	17,004
Union	7,546	7,408	11,182	12,540	31	36	36,150	43,616	21,977	28,953
Van Wert	8,370	8,571	9,413	10,684	141	152	9,273	13,338	16,393	24,963
Vinton	2,659	2,632	5,350	5,766	117	106	18,152	19,097	3,240	3,324
Warren	9,464	9,209	11,569	12,194	383	389	11,577	11,965	18,649	28,459
Washington	7,749	7,839	13,772	15,884	164	171	32,961	37,824	7,838	9,808
Wayne	11,165	11,115	20,615	22,730	182	182	21.573	25,571	27,454	31,690
Williams	6,192	6,277	10,122	11,259	65	57	21,521	24,466	17,891	19,888
Wood	11,640	11,731	15,807	14,730	130	101	19,478	17 586	29,694	37,612
Wyandot	7,227	6,962	11,191	11,440	51	55	56,475	56,245	26,155	27,400
Totals	735,050	717,734	1,174,094	1,265,664	15,445	15,030	2,123,624	2,404,558	1,455,247	1,794,014

Horses, 17,316 decrease. Cattle, 91,570 increase. Mules, 415 decrease. Sheep, 280,934 increase. Hogs, 338,767 increase.

AGRICULTURAL STATISTICS

GATHERED IN MAY, 1898, AND REPORTED TO THE SECRETARY OF AGRICULTURE, BY COUNTY AUDITORS, IN ACCORDANCE WITH SECTION 1523 OF THE REVISED STATUTES OF OHIO, AS AMENDED FEBRUARY 23, 1898.

HORSES AND CATTLE.

Counties.	Horses.	Cattle.			
	Number owned in 1897.	Beef Cattle owned in 1897.	Milch Cows owned in 1897.	All other Cattle owned in 1897.	Total Number owned in 1897.
Adams	4,538	1,361	3,814	4,146	9,321
Allen	6,901	2,737	6,117	3,696	12,550
Ashland	6,458	1,436	6,300	3,791	11,527
Ashtabula	7,375	1,875	15,624	3,186	20,685
Athens	4,100	2,617	4,073	4,351	11,041
Auglaize	6,882	1,937	6,311	3,840	12,088
Belmont	6,873	3,996	8,060	4,759	16,815
Brown	6,392	1,917	5,573	4,358	11,848
Butler	7,226	2,032	6,383	2,506	10,921
Carroll	5,150	2,200	5,902	4,768	12,870
Champaign	7,121	3,855	5,701	5,415	14,971
Clark	7,963	4,598	6,415	4,001	15,014
Clermont	5,388	985	5,362	1,345	7,692
Clinton	6,596	3,030	4,510	3,203	10,743
Columbiana	7,187	1,251	11,728	3,632	16,611
Coshocton	6,632	2,828	6,136	5,286	14,250
Crawford	6,517	1,815	6,359	3,965	12,139
Cuyahoga	1,902	....	9,146	53	9,199
Darke	13,014	3,020	10,035	6,163	19,218
Defiance	5,154	1,139	4,939	2,080	8,158
Delaware	6,902	3,540	6,305	5,508	15,353
Erie	3,768	642	4,303	1,932	6,877
Fairfield	8,646	3,531	6,542	5,915	15,988
Fayette	6,639	8,120	3,674	5,060	16,854
Franklin	9,173	2,549	9,893	2,778	15,220
Fulton	5,845	1,488	7,054	1,521	10,063
Gallia	4,495	1,896	4,918	3,854	10,668
Geauga	5,192	608	13,515	2,028	16,151
Greene	7,281	2,365	6,401	2,849	11,615
Guernsey	5,901	3,619	6,690	5,709	16,018
Hamilton	8,246	12,396	5,403	803	18,602
Hancock	9,244	3,705	8,539	6,319	18,563
Hardin	5,616	2,399	5,136	3,531	11,066
Harrison	4,503	1,599	5,015	3,444	10,058
Henry	6,456	1,912	6,715	3,169	11,796
Highland	7,271	3,568	5,183	5,854	14,605
Hocking	3,911	1,513	3,550	4,412	9,475
Holmes	6,443	3,061	6,389	3,550	13,000
Huron	7,218	2,659	6,972	2,718	12,349
Jackson	3,414	1,258	3,221	4,994	9,473
Jefferson	6,287	2,404	6,336	3,647	12,387
Knox	7,062	2,872	6,086	5,106	14,064
Lake	2,923	527	2,908	818	4,253
Lawrence	2,742	2,007	2,602	3,458	8,067
Licking	9,949	4,101	8,831	7,499	20,431
Logan	7,349	3,853	6,463	4,782	15,098
Lorain	6,937	3,006	11,298	2,273	16,577
Lucas	3,833	333	5,224	890	6,447
Madison	7,102	5,124	4,177	3,745	13,046
Mahoning	6,297	3,243	9,281	3,970	16,494
Marion	5,985	3,063	4,395	3,322	10,780
Medina	6,840	1,249	8,954	3,058	13,261
Meigs	5,158	2,089	4,045	3,779	9,913
Mercer	7,388	964	6,988	4,907	12,859
Miami	7,265	1,396	5,782	2,837	10,015
Monroe	5,841	1,925	6,992	3,896	12,813

HORSES AND CATTLE—Concluded.

Counties.	Horses.	Cattle.			
	Number owned in 1897.	Beef Cattle owned in 1897.	Milch Cows owned in 1897.	All other Cattle owned in 1897.	Total Number owned in 1897.
Montgomery	9,584	1,225	9,881	3,496	14,602
Morgan	5,407	2,896	4,825	5,652	13,373
Morrow	6,188	1,982	4,793	3,809	10,584
Muskingum	7,729	6,008	9,022	8,569	23,599
Noble	4,541	3,272	4,716	4,315	12,303
Ottawa	4,554	618	4,868	1,172	6,658
Paulding	4,690	1,075	3,491	1,106	5,672
Perry	4,865	2,606	4,686	5,331	12,623
Pickaway	6,668	4,511	4,016	5,004	13,531
Pike	3,590	750	2,187	2,674	5,611
Portage	7,207	2,688	13,351	3,613	19,652
Preble	7,865	2,435	6,733	3,835	13,003
Putnam	7,483	2,021	7,110	3,550	12,681
Richland	7,164	1,674	8,404	4,062	14,140
Ross	8,031	5,799	4,672	5,539	16,010
Sandusky	6,977	1,262	6,684	2,731	10,677
Scioto	3,337	716	3,368	2,211	6,295
Seneca	8,113	1,623	8,288	2,821	12,732
Shelby	8,467	2,128	6,442	4,251	12,821
Stark	9,041	3,044	12,260	6,018	21,322
Summit	6,102	2,203	12,092	2,630	16,925
Trumbull	8,958	3,026	16,595	7,078	26,699
Tuscarawas	6,341	3,040	10,416	5,323	18,779
Union	6,321	2,331	4,926	2,693	9,950
Van Wert	7,396	1,122	5,649	2,693	9,464
Vinton	2,917	1,081	2,585	3,184	6,850
Warren	7,496	1,440	4,943	3,831	10,214
Washington	7,041	2,411	7,307	5,739	15,457
Wayne	9,552	2,969	10,545	6,445	19,959
Williams	5,982	1,758	5,788	2,635	10,181
Wood	8,909	3,315	8,722	3,120	15,157
Wyandot	5,665	1,758	4,943	2,669	9,370
Totals	568,675	220,000	588,576	336,288	1,158,358

SHEEP AND WOOL.

Counties.	Sheep.					Wool.
	Number owned, 1897.	Killed by Dogs.		Injured by Dogs.		Pounds shorn, 1897.
		Number, 1897.	Value, 1897.	Number, 1897.	Value, 1897.	
Adams	7,655	112	$331 00	40	$64 00	39,021
Allen	18,826	290	574 00	121	233 00	77,012
Ashland	30,546	93	334 00	24	71 50	169,597
Ashtabula	15,307	600	1,419 00	171	464 00	90,381
Athens	36,169	189	519 00	78	149 00	196,726
Auglaize	9,103	242	491 00	60	132 00	49,405
Belmont	62,510	291	858 00	171	298 00	348,934
Brown	9,208	102	296 00	115	187 00	49,705
Butler	4,845	75	370 00	12	33 00	25,832
Carroll	57,571	248	732 00	177	280 00	326,937
Champaign	23,041	113	458 00	139	302 00	128,211
Clark	39,274	264	1,019 00	122	605 00	120,487
Clermont	3,839	107	594 00	47	217 00	25,554
Clinton	19,863	228	733 00	112	196 00	97,317
Columbiana	30,400	343	1,144 00	134	279 00	155,007
Coshocton	68,102	453	1,376 00	154	153 00	404,367
Crawford	34,975	133	500 00	91	183 00	199,646
Cuyahoga	1,727	86	365 00	88	296 00	29,773
Darke	6,436	88	764 00	77	389 00	28,031
Defiance	11,374	169	710 00	135	346 00	62,783
Delaware	37,200	322	998 00	104	202 00	186,144
Erie	9,797	177	661 00	62	148 00	59,675
Fairfield	11,609	144	519 00	76	256 00	56,350
Fayette	10,903	110	449 00	23	71 00	49,655
Franklin	8,155	204	688 00	93	202 00	46,748
Fulton	17,627	105	310 00	90	82 00	110,902
Gallia	11,670	253	754 00	157	186 00	76,464
Geauga	13,979	82	289 00	38	92 00	71,056
Greene	13,475	133	440 00	128	605 00	99,616
Guernsey	67,484	306	794 00	102	170 00	355,240
Hamilton	2,774	31	182 00	60	124 00	6,272
Hancock	32,801	411	1,388 00	175	412 00	171,988
Hardin	24,941	1,323	2,769 00	158	390 00	45,158
Harrison	89,432	340	1,401 00	240	550 00	562,095
Henry	7,909	192	617 00	145	235 00	41,028
Highland	22,023	235	781 00	67	123 00	84,205
Hocking	15,599	407	858 00	146	191 00	83,317
Holmes	22,761	155	795 00	28	69 00	118,686
Huron	45,941	214	789 00	96	218 00	284,424
Jackson	10,058	225	762 00	59	112 00	44,014
Jefferson	54,189	599	1,781 00	183	264 00	310,654
Knox	74,426	245	965 00	348	364 00	457,119
Lake	5,603	166	483 00	105	253 00	32,918
Lawrence	4,321	38	76 00	11	20 00	10,165
Licking	81,093	370	1,165 00	280	421 00	470,768
Logan	38,614	151	858 00	89	228 00	237,135
Lorain	19,906	173	588 00	94	185 00	115,431
Lucas	2,183	35	143 00	21	62 00	14,290
Madison	28,914	236	991 00	1,630	795 00	164,085
Mahoning	47,968	391	1,009 00	278	596 00	133,325
Marion	46,176	248	856 00	258	619 00	317,326
Medina	29,749	310	1,301 00	175	328 00	170,083
Meigs	25,524	422	1,010 00	138	247 00	132,118
Mercer	8,222	140	555 00	48	99 00	48,882
Miami	4,226	106	487 00	273	803 00	19,570
Monroe	14,211	268	679 00	105	172 00	70,686
Montgomery	2,039	43	126 00	13	39 00	11,713
Morgan	54,788	269	796 00	111	190 00	312,424
Morrow	47,104	554	1,962 00	235	528 00	341,632
Muskingum	76,484	958	2,927 00	464	735 00	441,585
Noble	41,457	269	856 00	150	305 00	232,378
Ottawa	4,355	108	372 00	73	124 00	27,160
Paulding	4,801	139	527 00	121	472 00	24,015
Perry	23,833	294	768 00	152	282 00	131,731
Pickaway	1,309	51	212 00	75	315 00	38,315
Pike	4,590	69	955 00	29	47 00	21,761
Portage	25,820	213	892 00	111	361 00	118,615
Preble	5,469	113	594 00	61	306 00	31,584
Putnam	7,799	192	765 00	142	319 00	49,363
Richland	31,367	104	414 00	56	158 00	164,947

SHEEP AND WOOL — Concluded.

Counties.	Sheep.					Wool.
	Number owned, 1897.	Killed by Dogs.		Injured by Dogs.		Pounds shorn, 1897.
		Number. 1897.	Value, 1897.	Number, 1897.	Value, 1897.	
Ross	12,932	411	$1,489 00	250	$713 00	53,111
Sandusky	13,658	129	409 00	94	216 00	85,016
Scioto	1,484	36	100 00	13	32 00	5,508
Seneca	28,772	404	1,581 00	168	470 00	145,419
Shelby	7,287	46	165 00	28	32 00	29,130
Stark	21,991	365	1,439 00	266	407 00	112,335
Summit	8,807	217	818 00	45	180 00	44,759
Trumbull	25,933	291	1,319 00	313	611 00	135,160
Tuscarawas	26,401	155	412 00	104	149 00	142,789
Union	29,838	364	814 00	219	419 00	194,238
Van Wert	9,115	162	594 00	86	243 00	50,665
Vinton	21,107	198	510 00	148	295 00	98,716
Warren	6,130	159	715 00	49	140 00	59,385
Washington	34,583	422	1,033 00	239	320 00	183,583
Wayne	22,288	190	861 00	137	583 00	116,191
Williams	23,457	139	555 00	1,260	878 00	136,522
Wood	19,745	376	1,738 00	174	411 00	102,511
Wyandot	55,817	121	337 00	97	192 00	352,924
Totals	2,152,859	21,084	$69,833 00	13,634	$25,243 50	11,877,503

DOMESTIC ANIMALS DIED FROM DISEASES.

Counties.	Hogs.		Sheep.		Cattle.		Horses.	
	Number.	Value.	Number.	Value.	Number.	Value.	Number.	Value.
Adams	806	$3,120 00	217	$646 00	179	$3,192 00	77	$2,635 00
Allen	5,528	18,315 00	471	2,031 00	225	3,994 00	114	5,435 00
Ashland	409	2,145 50	803	3,064 50	177	4,485 00	105	6,492 00
Ashtabula	214	1,064 00	422	1,479 00	238	6,779 00	83	3,479 00
Athens	161	736 00	616	1,206 00	103	1,967 00	45	1,820 00
Auglaize	2,292	7,431 00	240	768 00	140	3,203 00	225	6,250 00
Belmont	253	1,127 00	679	1,613 00	235	5,104 00	100	3,686 00
Brown	1,508	6,292 00	376	1,394 00	188	4,152 00	101	3,890 00
Butler	6,127	24,025 00	244	1,115 00	228	5,577 00	182	8,660 00
Carroll	168	807 00	1,106	2,258 00	99	2,299 00	73	2,696 00
Champaign	2,151	8,044 00	622	1,799 00	303	4,283 00	143	6,330 00
Clark	3,216	10,538 00	292	984 00	145	3,545 00	134	6,148 00
Clermont	874	3,308 00	180	571 00	148	3,302 00	95	3,460 00
Clinton	12,381	44,733 00	599	2,789 00	131	3,895 00	117	4,511 00
Columbiana	334	1,784 00	610	1,741 00	181	4,831 00	95	5,032 00
Coshocton	238	960 00	836	2,448 50	147	3,690 00	65	2,681 00
Crawford	2,802	9,581 00	826	7,348 00	142	2,989 00	146	5,090 00
Cuyahoga	406	1,881 00	203	543 00	252	8,216 00	94	4,815 00
Darke	3,417	12,428 00	177	816 00	262	4,738 00	231	9,387 00
Defiance	1,121	4,304 00	322	1,102 00	130	2,744 00	106	4,130 00
Delaware	5,290	17,216 00	873	1,956 00	143	3,863 00	89	4,745 00
Erie	813	3,239 00	114	358 00	83	3,400 00	79	4,838 00
Fairfield	2,156	8,553 00	232	887 00	136	3,062 00	140	4,740 00
Fayette	7,882	28,021 00	401	1,316 00	251	4,170 00	137	6,615 00
Franklin	5,030	19,558 00	279	973 00	300	8,177 00	245	10,122 00
Fulton	5,126	16,630 00	464	1,229 00	129	3,667 00	97	5,301 00
Gallia	375	1,445 00	420	1,058 00	145	2,540 00	106	3,670 00
Geauga	176	976 00	524	1,504 00	204	6,209 00	64	9,105 00
Greene	4,274	16,878 00	427	1,598 00	189	4,694 00	154	6,889 00
Guernsey	195	802 00	950	1,804 00	163	3,061 00	56	2,150 00
Hamilton	1,411	5,791 00	84	276 00	194	3,800 00	153	5,065 00
Hancock	2,347	8,865 00	879	2,641 00	284	5,906 00	179	9,730 00
Hardin	1,646	5,096 00	505	1,514 00	195	2,987 00	110	4,790 00
Harrison	97	483 00	547	1,377 00	135	3,000 00	53	2,690 00
Henry	8,881	27,501 00	387	1,108 00	222	4,926 00	146	8,160 00
Highland	6,860	25,211 00	890	3,054 00	134	3,605 00	98	3,413 00
Hocking	527	2,276 00	195	550 00	89	1,833 00	58	1,789 00
Holmes	402	1,633 00	728	3,289 00	157	3,402 00	100	4,506 00
Huron	773	3,150 00	559	2,141 00	136	3,220 00	90	4,721 00
Jackson	178	852 00	528	923 00	77	1,601 00	50	1,555 00
Jefferson	174	803 00	386	981 00	167	4,187 00	80	7,463 00
Knox	464	1,737 00	785	2,167 00	102	2,653 00	70	4,115 00
Lake	48	365 00	72	233 00	35	1,035 00	35	1,393 00
Lawrence	234	998 00	82	217 00	108	1,739 00	42	1,596 00
Licking	871	3,503 00	1,330	3,137 00	247	5,696 00	150	5,920 00
Logan	3,462	12,908 00	712	1,924 00	165	4,054 00	171	6,907 00
Lorain	183	1,033 00	343	1,104 00	174	4,816 00	63	3,027 00
Lucas	1,818	7,379 00	74	253 00	112	2,935 00	108	4,415 00
Madison	8,429	29,168 00	828	2,652 00	164	4,696 00	135	7,600 00
Mahoning	400	1,968 00	514	1,641 00	199	4,985 00	86	4,338 00
Marion	7,780	27,123 00	1,076	3,087 00	138	3,698 00	149	6,720 00
Medina	249	1,439 00	698	2,315 00	172	3,009 00	75	2,356 00
Meigs	189	881 00	411	757 00	110	2,001 00	67	2,245 00
Mercer	11,237	31 282 00	405	1,750 00	188	3,708 00	120	5,485 00
Miami	906	4,112 00	239	641 00	189	3,871 00	172	6,817 00
Monroe	251	1,144 00	304	716 00	147	2,511 00	66	2,456 00
Montgomery	1,605	7,721 00	122	452 00	237	5,689 00	155	8,093 00
Morgan	202	919 00	941	1,817 00	139	3,159 00	55	2,471 00
Morrow	470	1,968 00	964	2,146 00	157	3,101 00	116	5,372 00
Muskingum	222	999 00	793	1,754 00	164	3,466 00	64	3,156 00
Noble	242	911 00	720	1,788 00	162	3,689 00	136	2,425 00
Ottawa	2,452	8,437 00	59	222 00	232	2,536 00	92	4,320 00
Paulding	4,936	14,038 00	100	456 00	96	2,190 00	96	4,995 00
Perry	132	649 00	230	495 00	83	1,622 00	40	1,600 00
Pickaway	3,387	8,766 00	241	892 00	144	3,335 00	172	7,658 00
Pike	3,054	8,110 00	420	728 00	51	1,198 00	67	2,542 00
Portage	318	1,735 00	751	2,512 00	278	7,450 00	108	5,238 00
Preble	2,572	10,258 00	171	727 00	157	3,632 00	134	6,682 00
Putnam	14,935	45,932 00	441	1,667 00	211	4,580 00	129	12,722 00
Richland	577	2,019 00	449	1,510 00	106	2,537 00	84	4,682 00

DOMESTIC ANIMALS DIED FROM DISEASES — Concluded.

Counties.	Hogs.		Sheep.		Cattle.		Horses.	
	Number.	Value.	Number.	Value.	Number.	Value.	Number.	Value.
Ross	9,194	$33,148 00	364	$1,016 00	195	$5,360 00	175	$7,425 00
Sandusky	2,575	10,612 00	594	1,752 00	158	3,534 00	82	4,383 00
Scioto	273	1,317 00	75	209 00	119	2,170 00	69	2,713 00
Seneca	2,515	9,149 00	579	1,764 00	146	3,463 00	126	6,327 00
Shelby	2,638	7,429 00	168	514 00	164	3,212 00	121	5,315 00
Stark	1,087	4,763 00	782	2,411 00	340	8,097 00	201	10,358 00
Summit	670	3,068 00	249	881 00	296	7,227 00	118	5,469 00
Trumbull	371	1,923 00	725	2,124 00	296	8,668 00	128	5,630 00
Tuscarawas	476	2,062 00	585	1,532 00	206	4,219 00	121	5,252 00
Union	4,068	14,450 00	753	2,458 00	115	2,987 00	95	5,710 00
Van Wert	4,173	13,819 00	405	1,404 00	145	3,420 00	168	7,495 00
Vinton	212	965 00	327	594 00	50	999 00	35	1,265 00
Warren	1,731	6,437 00	344	1,182 00	143	3,635 00	96	4,308 00
Washington	271	1,894 00	824	1,777 00	178	3,658 00	109	5,178 00
Wayne	843	3,806 00	888	2,854 00	250	5,002 00	191	9,060 00
Williams	874	3,579 00	571	2,139 00	96	2,497 00	78	3,388 00
Wood	1,460	6,868 00	613	1,799 00	321	5,704 00	186	10,735 00
Wyandot	4,116	12,952 00	1,039	2,713 00	89	1,802 00	101	5,050 00
Totals	207,241	$733,330 50	44,379	$135,137 00	14,855	$339,540 00	9,772	$451,091 00

WHEAT, RYE AND BUCKWHEAT.

Counties.	Wheat.			Rye.			Buckwheat.	
	Acres sown for Harvest, 1897.	Bushels produced, 1897.	Acres sown for Harvest, 1898.	Acres sown for 1897.	Bushels produced, 1897.	Acres sown for 1898.	Acres sown, 1897.	Bushels produced, 1897.
Adams	19,146	241,235	25,896	887	6,914	590	17	158
Allen	25,834	328,024	29,581	312	3,635	159	20	188
Ashland	32,355	597,622	35,969½	928¼	13,216½	360½	165¼	2,432
Ashtabula	10,352	200,208	13,554	675	8,288	922	3,251	55,960
Athens	13,442	202,247	14,309	127	1,835	40	31	346
Auglaize	33,775	399,480	37,128	358	5,629	415	90	1,022
Belmont	24,549	406,539	28,123	736	9,206	217	100	1,234
Brown	28,707	251,883	28,323	1,640	12,668	1,672	25	156
Butler	49,053	916,826	57,865	462	6,298	90	10	56
Carroll	15,309	250,066	17,012	525	6,454	224	84	821
Champaign	38,613	514,096	43,366	379	4,463	280	59	870
Clark	34,341	539,361	41,126	671	9,406	348	18	172
Clermont	12,956	162,288	19,981	1,732	10,649	1,100	21	200
Clinton	32,108	498,287	37,820	901	8,403	383	35	325
Columbiana	21,006	431,575	23,825	508	7,634	245	159	2,058
Coshocton	27,652	550,925	32,169½	2,553½	26,262	838	145	1,444
Crawford	25,527	482,632	27,653	264	3,784	171	88½	1,090
Cuyahoga	10,656	162,382	10,656	65	15,982	539	23	279
Darke	59,201	774,220	67,373	1,250	16,759	790	136	1,354
Defiance	21,253	252,654	24,201	226¼	3,226	231	265	2,812
Delaware	15,725	208,277	22,062	375	3,273	296	328	975
Erie	17,979	414,918	19,628	806	13,591	406	394	4,582
Fairfield	39,951	679,559	47,443	1,345	15,157	470	42	182
Fayette	36,281	646,045	48,238	932	11,725	234	3	47
Franklin	30,995	563,884	46,087	1,649	21,017	506	158½	1,946
Fulton	21,824	365,356	24,504	715	10,546	497	484	7,208
Gallia	35,510	242,274	22,404	235	2,121	313	14	200
Geauga	7,517	156,257	10,443	370	5,335	224	319	5,487
Greene	43,655	616,485	52,353	567	8,228	708	11	176
Guernsey	17,594	277,848	21,612	625	6,524	311	379	1,738
Hamilton	13,805	260,505	15,819	1,201	17,581	896	6	60
Hancock	40,047	626,425	47,669	528	6,529	267	69	1,049
Hardin	24,171	289,929	27,884	225	3,527	191	69	653
Harrison	13,353	234,257	13,947	794	1,414	78	33	241
Henry	32,001	518,881	36,982	2,826	58,383	2,832	218	3,627
Highland	36,593	535,638	48,095	2,057	19,533	1,076	22	141
Hocking	16,363	189,996	34,146	238	2,157	157	108	1,127
Holmes	23,427	449,842	25,980	1,370	17,048	447	114	1,032
Huron	29,506	541,346	30,462	519	8,907	209	405	3,182
Jackson	12,100	141,424	14,781	99	802	30	146	1,823
Jefferson	15,248	293,037	17,004	246	2,731	44	33	303
Knox	29,974	621,728	55,829	2,019	20,500	766	190	1,634
Lake	4,392	91,714	6,225	659	10,830	669	54	917
Lawrence	6,838	67,438	9,730	82	454	85	19	119
Licking	26,228	416,127	47,693	3,517	37,155	1,748	319	2,904
Logan	27,860	328,759	32,139	538	7,037	437	124	1,370
Lorain	20,217	409,387	24,266	705	7,570	181	43	561
Lucas	12,735	262,385	15,388	1,268	22,263	843	672	10,232
Madison	25,613	420,933	39,205	555	7,725	303	16	62
Mahoning	15,117	408,650	18,539	984	12,813	300	171	2,559
Marion	20,923	323,423	21,932	187	2,951	83	27	325
Medina	19,325	429,131	23,873	1,150	21,939	369	89	1,226
Meigs	20,669	287,824	20,650	387	2,420	239	52	233
Mercer	30,621	367,945	35,692	692	9,263	564	62	754
Miami	40,072	668,198	46,458	479	7,623	228	18	25
Monroe	21,360	272,828	20,874	1,003	11,289	453	266	1,918
Montgomery	39,432	564,339	45,061	405	5,470	135	18	20
Morgan	14,630	223,180	15,350	171	2,163	68	50	518
Morrow	14,909	241,085	16,779	787	9,990	407	95	1,049
Muskingum	26,299	429,171	32,427	1,153	12,737	558	31½	360
Noble	15,153	232,364	17,009	231	3,109	80	42	365
Ottawa	18,143	323,890	20,122	502	10,449	442	30	355
Paulding	12,656½	120,950	16,470¼	408½	6,633	577¼	374¾	4,401
Perry	16,961	306,435	20,215	389	4,482	145	143	1,148

WHEAT, RYE AND BUCKWHEAT — Concluded.

Counties.	Wheat.			Rye.			Buckwheat.	
	Acres sown for Harvest, 1897.	Bushels produced, 1897.	Acres sown for Harvest, 1898.	Acres sown for 1897.	Bushels produced, 1897.	Acres sown for 1898.	Acres sown, 1897.	Bushels produced, 1897.
Pickaway	50,571	951,527	57,828	900	14,263	377	....	....
Pike	15,962	228,109	20,875	243	2,246	220	80	933
Portage	17,782	370,609	23,926	930	14,599	363	516	9,237
Preble	40,378	601,159	49,038	556	5,793	240	27½	54
Putnam	37,953	561,813	43,188	540½	8,633	498	106½	1,681
Richland	35,309	617,176	40,156	1,247	17,553	583	126	1,773
Ross	42,947	771,331	48,988	1,045	11,730	285	54	272
Sandusky	37,951	740,777	41,032	558	10,074	354	36	453
Scioto	17,502	263,944	20,064	80	792	136	53	652
Seneca	48,556	874,190	52,817	276	3,928	191	39	479
Shelby	31,582	351,181	35,191	379	5,736	354	106	1,357
Stark	45,890	900,724	51,085	984	12,751	375	92½	1,197
Summit	24,364	525,724	29,724	415	7,346	179	112	2,027
Trumbull	11,970	245,415	16,829	700	10,370	372	1,264	15,846
Tuscarawas	32,707	500,700	31,022	891	11,958	379	190	1,801
Union	20,705	298,462	22,423	496	4,853	321	82	935
Van Wert	27,558	365,988	34,534	501	7,663	563	198	2,259
Vinton	8,806	107,085	10,901	134	820	61	63	805
Warren	27,194	411,365	35,694	1,070	11,877	347	101	905
Washington	29,534	417,713	30,115	535	5,406	325	132	1,537
Wayne	44,142	945,872	50,254	615	9,793	179	74	1,116
Williams	22,480	286,815	20,419	471	7,219	259	142	2,013
Wood	36,812	724,633	42,218	575	11,070	517	173	2,823
Wyandot	25,399¾	418,757	28,267½	349	4,942	185	21	329
Totals	2,273,712	36,718,686	2,681,981	65,684	855,120	37,149	14,811	192,300

OATS, BARLEY AND CORN.

Counties.	Oats.			Barley.			Corn.		
	Acres sown, 1897.	Bushels produced, 1897.	Acres sown for 1898.	Acres sown for 1897.	Bushels produced, 1897.	Acres sown for 1898.	Acres planted, 1897.	Bushels (shelled) produced, 1897.	Acres planted, estimated, for Crop of 1898.
Adams	3,504	43,329	2,557	4	130	....	36,572	937,766	36,468
Allen	12,172	349,308	10,246	152	3,854	146½	34,639	1,357,388	35,419
Ashland	16,697¾	609,853	16,467½	114½	3,640	196	25,324	831,350	23,459¼
Ashtabula ..	22,228	618,906	24,143	82	1,637	102	15,725	448,283	13,864
Athens	1,907	32,725	1,401	....	....	....	16,030	477,430	15,432
Auglaize	14,016	436,821	12,965	272	6,590	75	41,577	1,403,978	43,436
Belmont	8,225	183,874	6,620	78	1,429	157	23,515	844,974	23,928
Brown	6,707	107,478	5,542	....	....	....	47,775	1,616,065	45,063
Butler	10,066	234,489	6,171	1,678	62,521	804	50,623	1,942,276	49,260
Carroll	14,170	375,584	14,409	4	55	8	14,293	439,523	14,447
Champaign .	9,972	278,744	7,529	28	640	57	51,003	1,858,336	48,961
Clark	6,316	190,345	4,848	17	569	13	46,403	2,026,852	47,403
Clermont ...	7,751	117,593	6,817	....	8	....	37,195	1,000,661	36,680
Clinton	3,956	99,373	2,712	56	1,110	26	61,395	2,286,104	55,029
Columbiana .	20,302	603,300	19,929	18	503	42	17,851	536,015	18,451
Coshocton ..	10,151½	192,631	8,957½	1	15	8	25,307½	790,637	25,272½
Crawford ...	20,886	703,046	21,171	186	4,668	204	34,178	1,106,100	35,962
Cuyahoga ...	13,370	459,889	11,905	....	194	8	9,423	329,851	8,346
Darke	19,385	628,447	16,361	499	13,473	609	81,385	3,102,697	79,116
Defiance	14,988	468,003	17,607	750	21,679	986	26,091	916,558	29,118
Delaware ...	12,785	320,801	14,835	10	200	54	41,141	1,449,185	40,694
Erie	13,522	463,806	13,283	594	18,392	552	17,094	572,969	22,067
Fairfield	3,835	78,083	3,222	26	895	45	46,326	1,688,568	44,127
Fayette	1,585	46,186	1,104	16	466	2	62,573	2,570,879	60,082
Franklin	11,588	306,703	9,829	39	1,000	31	68,090	2,523,647	66,035
Fulton	16,130	563,653	18,606	485	6,962	580	25,881	920,257	26,211
Gallia	4,099	51,727	2,878	1	3	1	26,351	616,806	26,009
Geauga	13,564	423,622	13,232	10	198	19	9,979	330,419	9,324
Greene	4,694	139,219	4,269	104	2,254	35	57,388	2,330,046	57,127
Guernsey ...	7,694	137,928	5,807	47	829	49	20,159	600,491	20,328
Hamilton ...	4,169	79,636	2,928	503	14,597	1,397	20,684	725,646	17,201
Hancock	11,252	352,392	10,104	142	4,032	258	49,556	1,736,131	52,758
Hardin	10,055	329,230	9,269	13	336	14	35,548	1,368,508	38,095
Harrison	6,480	170,958	5,099	55	1,170	258	13,151	467,615	12,498
Henry	14,822	352,776	10,328	3,308	40,834	1,753	48,343	2,038,971	51,452
Highland ...	2,245	36,029	1,775	2	26	10	55,407	1,691,519	50,203
Hocking	1,810	24,507	1,427	....	....	....	27,892	445,936	16,843
Holmes	15,253	464,954	15,320	34	1,161	39	21,627	705,329	19,889
Huron	26,376	818,363	25,285	323	8,828	359	28,447	894,766	29,781
Jackson	1,563	20,342	919	6	....	....	16,221	347,166	15,056
Jefferson	11,259	300,346	10,044	95	1,623	71	14,417	475,869	14,233
Knox	11,100	331,494	10,600	4	84	10	32,476	1,034,932	33,198
Lake	7,423	282,175	6,396	17	417	31	6,398	250,227	5,381
Lawrence ...	4,148	50,858	4,152	5	....	8	18,702	444,250	18,326
Licking	15,080	348,096	13,305	32	684	50	53,226	1,619,161	52,526
Logan	9,975	238,169	8,658	79	2,215	87	42,373	1,606,952	44,529
Lorain	21,364	675,658	20,204	248	742	69	19,962	568,355	18,310
Lucas	11,053	405,204	12,718	289	8,544	439	18,760	696,837	19,449
Madison	7,277	202,909	6,274	102	305	34	80,577	2,922,451	79,271
Mahoning ...	18,211	542,087	17,959	5	49	21	15,403	426,137	15,068
Marion	14,949	404,892	15,563	4	92	11	41,629	1,451,218	44,659
Medina	22,084	777,848	....	49	1,093	93	20,278	677,588	19,345
Meigs	3,179	54,595	2,852	34	628	23	17,688	425,885	16,918
Mercer	20,563	605,476	20,919	237	5,463	295	44,393	1,416,796	47,886
Miami	14,006	522,361	12,474	142	4,119	157	46,539	1,907,044	42,869
Monroe	7,149	122,154	6,571	2	....	6	18,184	537,453	19,064
Montgomery .	11,963	345,303	10,655	247	9,460	149	46,860	1,658,414	44,765
Morgan	2,409	44,898	2,066	2	2	....	17,216	578,362	16,755
Morrow	15,614	440,993	15,208	....	....	5	27,322	856,196	29,021
Muskingum .	6,934	117,933	5,660	14	225	16	31,144	945,800	30,305
Noble	3,935	74,511	2,946	3	100	4	18,386	613,915	17,974
Ottawa	8,101	287,828	7,562	2,090	52,933	2,037	20,539	813,510	18,610
Paulding	9,077¼	290,712	10,073	1,192½	32,166	2,076½	32,888	1,110,984	35,352¼
Perry	1,832	34,665	1,162	....	....	....	18,673	623,430	18,225
Pickaway	1,660	38,522	894	57	1,200	....	76,276	2,615,699	69,697

OATS, BARLEY AND CORN — Concluded.

Counties.	Oats.			Barley.			Corn.		
	Acres sown, 1897.	Bushels produced, 1897.	Acres sown for 1898.	Acres sown for 1897.	Bushels produced, 1897.	Acres sown for 1898.	Acres planted, 1897.	Bushels (shelled) produced, 1897.	Acres planted, estimated, for crop of 1898.
Pike	2,043	32,709	1,422	20	660	24	25,258	737,540	24,662
Portage	21,334	702,875	19,615	....	....	20	18,005	448,948	15,328
Preble	11,902	318,380	8,246	55	2,046	57	50,809	1,884,200	49,928
Putnam	6,591	218,534	5,651	1,030	29,547	1,613	57,894	2,433,846	57,391
Richland	23,869	787,202	23,517	226	5,873	201	30,186	977,172	30,519
Ross	1,516	24,821	1,192	36	400	2	63,730	2,218,451	60,491
Sandusky ...	14,822	568,987	16,146	202	5,425	148	38,878	1,497,865	43,039
Scioto	4,192	65,546	3,084	164	1,105	6	21,879	715,199	22,714
Seneca	18,846	592,493	19,227	26	780	87	43,426	1,420,813	46,680
Shelby	20,005	565,007	18,722	401	8,001	155	42,515	1,332,986	43,876
Stark	49,098	1,100,271	30,340	52	806	16	30,988	1,125,604	30,770
Summit	25,992	701,253	19,185	29	776	28	19,176	614,926	18,695
Trumbull	24,534	754,977	21,495	208	75	10	16,527	416,520	14,715
Tuscarawas .	19,542	462,495	19,565	55	1,162	23	23,897	684,775	22,170
Union	12,533	331,050	11,429	6	118	26	44,841	1,503,679	43,783
Van Wert ..	13,230	429,662	10,548	1,468	41,948	1,454	48,231	1,861,126	46,687
Vinton	1,543	22,548	1,302	10	250	12	12,217	300,466	12,972
Warren	7,492	190,654	5,758	495	12,217	237	45,493	1,745,400	43,747
Washington .	8,215	154,905	7,453	....	....	....	24,906	759,702	24,615
Wayne	27,811	1,029,760	24,730	98	3,015	99	35,799	1,346,455	34,892
Williams	19,430	664,182	22,959	462	14,547	1,007	25,058	776,751	28,954
Wood	27,249	1,039,803	28,788	1,295	42,991	2,223	77,205	2,503,655	75,345
Wyandot	10,070	300,578	10,678	54	516	13	34,436½	1,113,728	36,604½
Totals ...	1,052,605	30,563,033	943,844	21,008	519,305	22,051	2,999,826	103,004,970	2,961,208

MEADOW AND CLOVER.

Counties.	Meadow.		Clover.			
	Acres in Grass other than Clover, 1897.	Tons of Hay produced, 1897.	Acres grown, 1897.	Tons of Hay produced, 1897.	Bushels of Seed produced, 1897.	Acres plowed under for Manure, 1897.
Adams	11,207	9,486	10,108	7,425	10,004	574
Allen	19,140	21,497	14,861	18,057	18,999	340
Ashland	16,946	21,597	22,367¾	32,459	17,618¾	1,044½
Ashtabula	39,927	50,451	4,576	6,780	2,268	290
Athens	16,648	17,941	1,761	2,450	191	131
Auglaize	14,485	16,442	11,855	15,585	13,702	1,210
Belmont	28,207	28,876	10,211	12,919	8,125	165
Brown	15,741	13,450	6,362	2,351	2,798	484
Butler	12,745	14,096	19,275	17,278	12,466	4,785
Carroll	23,444	22,602	7,656	8,457	6,038	56
Champaign	11,268	15,566	19,113	24,238	20,524	2,138
Clark	12,735	18,210	16,351	21,675	13,109	1,328
Clermont	21,703	14,145	5,756	4,333	1,578	957
Clinton	10,604	11,792	15,411	18,334	11,976	2,118
Columbiana	30,816	38,475	10,871	14,857	6,541	71
Coshocton	25,065	26,182	8,507	10,478	10,758	101
Crawford	22,614	31,545	15,147	22,271	20,605	127
Cuyahoga	25,179	34,363	2,641	4,419	1,344	209
Darke	15,098	19,420	29,131	30,699	27,478	8,232
Defiance	15,388	18,613	19,280	23,093	18,253	925
Delaware	32,148	35,558	17,560	21,587	8,133	166
Erie	8,386	11,532	8,692	10,397	9,414	574
Fairfield	18,971	17,466	19,419	22,390	19,902	1,041
Fayette	10,701	14,149	9,810	10,305	11,947	1,363
Franklin	26,158	30,987	16,830	19,196	16,952	1,743
Fulton	12,439	16,721	14,091	18,917	17,549	1,089
Gallia	16,136	13,312	3,004	2,892	817	548
Geauga	19,462	24,807	5,613	9,155	1,749	293
Greene	15,044	17,542	21,109	18,796	15,318	3,025
Guernsey	29,702	28,969	4,124	5,024	3,182	34
Hamilton	13,370	14,463	3,865	5,088	2,154	592
Hancock	24,852	29,540	24,263	32,576	27,923	348
Hardin	27,273	24,937	12,057	21,494	14,793	219
Harrison	30,406	28,295	4,456	5,878	5,829	79
Henry	9,554	12,077	17,627	17,744	20,098	1,556
Highland	17,953	15,542	14,177	13,825	18,006	561
Hocking	10,681	8,473	3,903	3,720	2,946	129
Holmes	14,523	20,827	12,358	15,490	12,337	528
Huron	25,600	33,353	20,087	26,941	22,836	636
Jackson	16,322	13,140	879	1,053	160	144
Jefferson	22,753	26,124	7,448	9,917	8,979	114
Knox	22,053	25,559	18,431	20,210	17,008	1,034
Lake	11,402	15,412	1,096	1,731	1,045	146
Lawrence	5,726	5,113	1,685	1,082	254	141
Licking	46,409	53,755	15,232	15,314	17,562	291
Logan	16,386	18,952	18,408	26,675	16,205	499
Lorain	32,947	37,790	10,470	14,396	6,741	196
Lucas	10,374	13,968	6,944	10,200	10,172	434
Madison	12,933	16,809	13,505	15,220	7,895	1,344
Mahoning	17,374	20,601	13,602	19,323	7,760	169
Marion	17,447	21,276	14,608	20,352	14,073	379
Medina	19,323	25,434	16,727	23,509	13,965	156
Meigs	14,951	14,717	3,991	3,555	444	1,098
Mercer	18,153	20,251	12,542	14,941	15,465	266
Miami	8,550	11,421	17,339	18,894	13,611	4,777
Monroe	19,446	18,950	5,074	6,285	5,574	169
Montgomery	11,402	15,132	21,021	22,432	16,286	6,792
Morgan	19,200	19,905	6,729	8,828	5,269	214
Morrow	24,845	31,227	16,652	21,713	17,085	180
Muskingum	33,955	32,813	8,084	9,283	6,170	156
Noble	23,046	23,465	4,541	5,352	2,451	72
Ottawa	8,571	11,232	9,049	13,286	8,748	210
Paulding	11,618	12,360½	8,894½	7,463	9,528½	1,227½
Perry	17,642	17,460	6,884	8,035	9,933	109
Pickaway	10,020	10,807	14,054	18,997	15,320	3,707
Pike	4,641	3,615	5,858	3,677	3,590	1,866
Portage	17,644	21,124	13,569	18,869	10,644	396

MEADOW AND CLOVER — Concluded.

Counties.	Meadow.		Clover.			
	Acres in Grass other than Clover, 1897.	Tons of Hay produced, 1897.	Acres grown, 1897.	Tons of Hay produced, 1897.	Bushels of Seed produced, 1897.	Acres plowed under for Manure, 1897.
Preble	9,809	10,509	31,247	22,081	14,593	6,020
Putnam	14,682	18,105	16,054	19,852	33,306	1,775
Richland	19,213	27,010	23,080	34,156	32,190	458
Ross	11,162	11,204	13,894	11,076	16,134	2,710
Sandusky	15,717	20,585	18,004	21,271	20,430	894
Scioto	10,571	9,311	3,567	3,389	1,691	1,335
Seneca	19,081	23,836	28,430	38,937	34,620	1,034
Shelby	10,408	11,252	17,098	18,195	17,033	1,232
Stark	33,628	45,563	16,374	23,112	12,609	499
Summit	18,020	26,815	10,914	17,263	7,440	571
Trumbull	34,276	43,870	9,891	14,471	4,408	503
Tuscarawas	32,585	35,951	9,309	10,735	9,105	152
Union	19,957	25,456	14,007	19,541	7,747	514
Van Wert	21,898	25,956	10,528	13,215	10,959	336
Vinton	13,040	11,513	1,715	1,915	552	201
Warren	14,421	14,488	16,681	16,740	9,560	4,087
Washington	25,110	24,427	8,914	10,806	6,597	534
Wayne	22,005	32,591	25,366	41,009	17,741	760
Williams	23,816	28,586	18,084	21,358	17,736	1,018
Wood	22,047	28,847	16,923	19,424	21,372	857
Wyandot	21,850	26,371½	13,815	17,888	18,510	605
Totals	1,661,038	1,903,963	1,101,497	1,336,599	1,032,531	92,191

TOBACCO, FLAX AND POTATOES.

Counties.	Tobacco.		Flax.			Potatoes.		
	Acres planted, 1897.	Pounds produced, 1897.	Acres sown, 1897.	Bushels of Seed, 1897.	Pounds of Fibre, 1897.	Acres planted, 1897.	Bushels produced, 1897.	Acres estimated for Crop of 1898.
Adams	1,018	786,098	....	....	....	303	14,339	233
Allen	....	520	8	17	....	760	23,188	562
Ashland	4½	2,995	1,047½	9,015	522,500	995¼	62,779	970¾
Ashtabula	....	....	....	....	....	3,216	244,397	2,737
Athens	8	3,700	....	....	....	573	25,399	557
Auglaize	11	4,100	16	126	....	1,109	25,304	827
Belmont	1,305	1,226,297	....	....	....	990	58,726	891
Brown	2,268	2,008,930	....	....	....	823	29,013	872
Butler	699	531,662	....	....	....	1,237	63,323	1,053
Carroll	....	....	....	....	....	754	54,195	710
Champaign	33	19,100	3	30	....	566	21,208	423
Clark	162	150,260	....	....	....	817	41,529	616
Clermont	1,302	991,950	....	....	....	1,578	62,456	1,156
Clinton	30	23,590	15	....	....	565	27,325	447
Columbiana	....	....	....	....	....	1,690	149,302	1,627
Coshocton	....	....	....	....	....	1,014	65,896	911½
Crawford	....	....	108	1,022	5	1,413	73,451	1,346
Cuyahoga	....	....	6	60	....	5,684	543,867	4,933
Darke	5,818	5,768,440	....	....	....	1,847	59,242	1,538
Defiance	3¾	3,600	....	....	....	971	51,514	928
Delaware	....	....	....	....	....	621	20,734	558
Erie	1	80	....	....	....	2,712	248,383	2,563
Fairfield	....	4	....	....	....	1,192	54,052	957
Fayette	....	....	....	62	....	144	10,757	106
Franklin	....	....	....	....	....	1,979	75,691	1,602
Fulton	....	....	2	10	....	1,184	88,576	1,116
Gallia	318	235,955	7	10	....	451	19,898	294
Geauga	1	24	5	60	....	2,538	225,630	2,741
Greene	299	190,540	24	70	....	922	48,760	874
Guernsey	182	218,945	....	12	....	504	33,776	497
Hamilton	107	106,940	....	....	....	4,715	261,545	4,034
Hancock	1¼	25¼	21	92	....	1,279	52,139	1,196
Hardin	....	....	....	....	....	1,216	47,392	1,342
Harrison	....	....	....	....	....	437	30,256	388
Henry	....	....	2	54	....	1,618	64,213	1,546
Highland	19	14,060	....	....	....	384	17,477	323
Hocking	1	120	....	....	....	763	38,270	586
Holmes	1	75	....	....	....	822	54,493	748
Huron	....	....	230	1,965	90,115	1,438	92,544	1,240
Jackson	....	....	....	....	....	350	13,791	260
Jefferson	....	....	....	....	....	813	57,466	699
Knox	....	....	....	....	....	779	39,236	647
Lake	2	650	....	....	....	1,545	166,067	1,285
Lawrence	30	17,800	....	....	....	392	18,633	288
Licking	....	....	....	....	....	1,396	69,427	1,251
Logan	¼	15	....	....	....	1,207	22,955	633
Lorain	....	....	173	1,320	59,010	2,133	178,502	2,271
Lucas	....	....	17	245	....	2,927	251,471	3,132
Madison	....	....	....	....	....	237	13,372	270
Mahoning	....	....	8	45	....	1,616	133,900	1,535
Marion	1½	100	95	779	....	864	35,823	864
Medina	112	134,500	564	4,370	37,514	1,969	178,142	1,802
Meigs	11	9,330	4	....	....	952	52,378	855
Mercer	3	1,025	4	13	....	972	23,317	954
Miami	7,555	1,964,420	95	880	84,800	1,096	45,426	750
Monroe	1,422	1,293,479	2	1	....	1,227	81,186	1,271
Montgomery	9,786	7,132,269	18	7	....	1,284	58,772	1,147
Morgan	108	60,270	....	....	....	452	29,608	559
Morrow	....	....	....	....	....	927	55,672	1,218
Muskingum	5	3,800	....	....	....	1,182	57,078	852
Noble	981	833,680	....	....	....	587	35,949	450
Ottawa	....	....	....	....	....	846	33,258	727
Paulding	2	800	6	40	....	597¾	18,171	508½
Perry	2	1,500	....	....	....	738	41,625	631
Pickaway	....	....	....	....	....	593	29,530	443
Pike	35	22,910	....	....	....	510	24,299	476
Portage	3	1,000	55	404	29,500	5,222	473,724	5,361
Preble	3,927	3,128,000	72	344	....	724	31,611	579
Putnam	1	320	9	2	....	1,212	48,615	945

TOBACCO, FLAX AND POTATOES — Concluded.

Counties.	Tobacco.		Flax.			Potatoes.		
	Acres planted, 1897.	Pounds produced, 1897.	Acres sown, 1897.	Bushels of Seed, 1897.	Pounds of Fibre, 1897.	Acres planted, 1897.	Bushels produced, 1897.	Acres estimated for Crop of 1898.
Richland	....	....	191	1,415	42,650	1,705	113,671	2,357
Ross	....	....	....	....	....	853	42,483	668
Sandusky	....	....	....	....	....	1,931	140,743	2,166
Scioto	205	182,275	....	....	....	911	58,348	842
Seneca	....	....	147	80	....	1,472	82,232	1,421
Shelby	57	37,968	42	277	1,603	875	25,364	686
Stark	3	4,100	1¼	7½	4	3,347	258,558	3,068½
Summit	....	....	....	....	....	2,550	215,308	2,608
Trumbull	....	....	105	518	19,000	2,876	207,751	3,694
Tuscarawas	....	....	....	....	....	2,082	144,449	2,041
Union	....	....	6	6	....	376	12,092	285
Van Wert	1	25	5	15	....	740	25,393	609
Vinton	1¼	190	½	2	....	526	22,446	501
Warren	2,653	1,796,522	....	....	....	604	36,788	627
Washington	107	78,934	1	4	....	1,831	103,866	1,443
Wayne	215	248,315	257	2,261	126,600	1,994	150,250	1,629
Williams	....	....	....	....	....	928	44,184	837
Wood	....	....	....	....	....	1,157	70,222	1,158
Wyandot	1½	18	....	....	....	844¼	32,361½	730¼
Totals	40,823	29,242,225	3,377	25,640	1,013,301	114,832	7,286,582	106,083

ORCHARDS.

Counties.	Acres occupied, 1897.	Apples, Bushels produced, 1897.	Peaches, Bushels produced, 1897.	Pears, Bushels produced, 1897.	Cherries, Bushels produced, 1897.	Plums, Bushels produced, 1897.
Adams	3,120	55,547	560	322	210	267
Allen	3,064	56,162	105	384	153	104
Ashland	3,947½	28,586	27	469	356½	51½
Ashtabula	4,152	14,800	4,553	884	739	252
Athens	9,567	32,577	793	52	310	269
Auglaize	2,404	48,969	17	925	139	77
Belmont	6,390	31,786	358	1,384	1,736	644
Brown	3,322	34,775	411	367	177	280
Butler	1,534	3,989	10	585	267	57
Carroll	4,800	24,565	1	207	575	19
Champaign	2,211	19,946	55	748	393	268
Clark	2,273	15,073	36	731	683	915
Clermont	7,533	55,483	100	1,830	364	166
Clinton	2,544	34,127	251	939	334	1,314
Columbiana	8,039	63,787	115	573	3,011	1,329
Coshocton	7,023	63,230	81	234	490	41
Crawford	3,963	56,005	49	323	223	26
Cuyahoga	4,179	78,358	29	2,214	711	544
Darke	4,606	56,263	....	1,380	1,276	409
Defiance	2,824	58,187	68	271	135	26
Delaware	3,278	11,600	89	56	41	64
Erie	3,638	25,746	2	570	181	761
Fairfield	4,216	67,695	243	455	465	64
Fayette	1,342	28,427	148	244	756	73
Franklin	4,423	54,304	107	526	262	656
Fulton	4,077	53,327	2	636	295	8
Gallia	6,839	79,903	3,565	118	268	811
Geauga	3,242	6,688	30	733	297	34
Greene	2,225	6,903	114	302	147	41
Guernsey	6,295	50,978	196	140	274	46
Hamilton	3,552	15,303	788	6,498	1,435	85
Hancock	4,919	125,156	12	394	114	48
Hardin	2,836	61,641	107	169	101	132
Harrison	3,790	10,960	20	124	271	45
Henry	3,413	109,870	44	580	486	54
Highland	4,378	70,130	157	317	169	43
Hocking	3,835	68,488	260	20	53	25
Holmes	3,979	73,343	78	236	640	5
Huron	5,434	40,149	7	269	223	66
Jackson	3,347	71,092	191	27	37	29
Jefferson	4,152	39,843	60	400	317	466
Knox	4,206	26,028	71	41	113	7
Lake	2,419	16,033	899	1,312	229	441
Lawrence	5,265	34,948	2,285	227	474	434
Licking	6,120	57,352	70	338	236	125
Logan	2,486	30,362	170	738	299	447
Lorain	4,740	19,471	317	585	195	126
Lucas	3,570	31,234	1½	2,142	1,102	205
Madison	1,338	30,094	15	150	283	117
Mahoning	4,861	31,867	28	775	1,028	1,155
Marion	2,285	14,930	90	231	51½	303
Medina	3,723	11,466	5	104	78	23
Meigs	6,846	44,564	1,077	266	338	334
Mercer	2,573	57,288	393	319	98	50
Miami	2,063	8,566	67	740	1,284	147
Monroe	5,653	48,964	617	255	795	288
Montgomery	3,512	9,664	101	2,228	1,179	263
Morgan	5,292	45,049	282	196	455	48
Morrow	4,572	56,956	47	162	99	148
Muskingum	7,651	83,680	400	652	564	44
Noble	4,189	46,065	402	230	185	98
Ottawa	9,378	45,265	50	1,172	135	3,760
Paulding	1,792¾	39,518	5	190	12	18½
Perry	3,465	51,725	210	221	158	25
Pickaway	1,948	23,636	455	219	247	144
Pike	3,311	72,580	27	43	60	48
Portage	5,103	9,948	22	311	307	69
Preble	2,772	11,907	24	677	518	375
Putnam	3,231	95,854	20½	445	407	30
Richland	5,831	40,736	....	402	562	18

ORCHARDS — Concluded.

Counties.	Acres occupied, 1897.	Apples, Bushels produced, 1897.	Peaches, Bushels produced, 1897.	Pears, Bushels produced, 1897.	Cherries, Bushels produced, 1897.	Plums, Bushels produced, 1897.
Ross	4,529	49,657	181	205	615	158
Sandusky	3,849	79,982	66	262	1,523	31
Scioto	2,824	74,641	2,077	44	116	109
Seneca	4,826	53,618	....	552	247	54
Shelby	1,963	28,661	37	537	202	186
Stark	6,905½	126,984	43	1,250	2,236	204
Summit	4,114	32,476	52	1,193	1,716	373
Trumbull	5,050	10,247	213	335	550	144
Tuscarawas	7,044	107,052	140	362	1,036	137
Union	2,411	16,781	96	176	105	272
Van Wert	3,093	42,388	8	199	159	15
Vinton	3,834	47,153	288	81	59	24
Warren	3,125	12,505	26	330	110	134
Washington	11,102	38,939	543	91	315	199
Wayne	5,624	53,566	50	647	1,323	74
Williams	4,377	32,350	20	900	112	16
Wood	5,423	113,526	16	1,043	1,054	491
Wyandot	3,000½	38,832½	66	175	48	23
Totals	373,995	3,958,869	25,912	51,389	42,132	22,544

GRAPES, WINE AND SWEET POTATOES.

Counties.	Grapes and Wine.				Sweet Potatoes.	
	Acres (new) Vineyard planted, 1897.	Whole Number of Acres Vineyard, 1897.	Pounds of Grapes gathered in 1897.	Gallons Wine pressed in 1897.	Acres planted, 1897.	Bushels produced, 1897.
Adams	....	1	2,600	......	12	758
Allen	½	24⅜	41,073	862	14	63
Ashland		2	11,340	139	4	164½
Ashtabula	14	1,061	4,864,285	2,022	......	....
Athens	....	....	....	1,405	4	350
Auglaize	1	50	17,160	1,579	4	30
Belmont	25	78	108,110	3,185	1	40
Brown	....	4	200	218	12	865
Butler	2	36	27,680	1,310	22	2,160
Carroll	....	....	400	155	......	7
Champaign	2	15	12,300	305	17	601
Clark	1	26	71,420	10,993	15	1,952
Clermont	12	158	127,450	4,420	51	2,937
Clinton	....	2	5,767	......	7	645
Columbiana	....	....	500	......	......	50
Coshocton	....	3¾	1,600	435	1⅜	122
Crawford	7⅜	14	23,920	1,181	⅘	106
Cuyahoga	25	4,069	15,426,430	54,316	......	....
Darke	....	36	69,995	......	149	3,673
Defiance	7¾	27¾	46,292	724	3⅛	135
Delaware	....	....	500	25	......	....
Erie	25	1,397	3,412,010	80,400	11	1,155
Fairfield	10	63	59,300	365	29	1,162
Fayette	....	2	1,850	80	2	57
Franklin	21	28¼	13,050	160	5	94
Fulton	....	4	12,390	608	2	252
Gallia	6	202	3,598	......	18	811
Geauga	4	266	891,740	1,781	......	22
Greene	....	21	3,750	......	4	195
Guernsey	....	....	....	......	......	....
Hamilton	25	153	178,335	6,715	104	8,817
Hancock	1⅞	17½	34,295	418	4	256
Hardin	....	91	12,464	84	2	36
Harrison	4	2	2,425	......	2	55
Henry	6	18	23,826	2,735	3	187
Highland	....	1	6,800	172	8¼	522
Hocking	4	14	6,225	38	30	864
Holmes	1	4	4,860	170	......	....
Huron	4	6	8,550	620	......	....
Jackson	....	2	2,510	10	6	285
Jefferson	....	11	9,025	202	1	15
Knox	3	2	9,150	8	......	....
Lake	63	3,130	10,530,580	20,439	......	....
Lawrence	3	8	10,210	......	132	12,727
Licking	....	....	10,862	16	6½	274
Logan	16	16	27,275	179	8	210
Lorain	15	824	2,764,008	11,635	6	720
Lucas	25¾	307¾	531,885	12,378	......	....
Madison	1	1	5,430	20	2	109
Mahoning	1	....	525	......	......	7
Marion	2¼	....	3,660	263	5½	290
Medina	1	12	61,000	404	......	....
Meigs	2	5	11,800	32	16	989
Mercer	....	20	21,225	1,160	5	85
Miami	5	7	22,750	480	7	844
Monroe	7¼	2	8,700	873	......	38
Montgomery	....	58	37,570	6,362	11	669
Morgan	....	2	1,050	115	8	537
Morrow	....	6	3,150	15	1¾	40
Muskingum	4	4¼	13,190	81	36	2,929
Noble	1	1	880	111	4	350
Ottawa	3	2,587	6,622,102	219,856	......	....
Paulding	1½	77⅛	3,373	10	2⅝	64
Perry	....	4	5,300	......	51	1,215
Pickaway	....	50	3,000	66	50	18
Pike	....	7	4,900	......	4	165

GRAPES, WINE AND SWEET POTATOES — Concluded.

Counties.	Grapes and Wine.				Sweet Potatoes.	
	Acres (new) Vineyard planted, 1897.	Whole Number of Acres Vineyard, 1897.	Pounds of Grapes gathered in 1897.	Gallons Wine pressed in 1897.	Acres planted, 1897.	Bushels produced, 1897.
Portage	3	18	9,900	......	......	....
Preble	7¾	1¼	82,730	1,082	18¼	1,616
Putnam	1½	33½	44,038	698	3	181
Richland	....	4	45,020	118	1	93
Ross	9¼	21½	16,380	417	⅜	39
Sandusky	4	11	23,061	352	6	282
Scioto	....	5	3,450	45	17	980
Seneca	10½	8¾	37,755	657	1½	887
Shelby	....	5	12,625	214	5	249
Stark	2½	¼	16,760	596	......	170
Summit	2	....	13,634	5	......	....
Trumbull	....	12	66,480	65	¼	30
Tuscarawas	....	37	27,900	1,923	......	27
Union	....	13	20,585	1,233	⅛	2½
Van Wert	1	2	15,237	361	1	25
Vinton	....	½	1,125	10	8	428
Warren	1⅛	8	34,740	1,602	40¼	653
Washington	....	4	4,346	171	121	20,054
Wayne	1¼	27½	71,825	1,660	2	335
Williams	....	5	5,070	123	5	388
Wood	6	87	204,585	1,643	¼	10
Wyandot	⅜	4⅞	18,650	296	1	60
Totals	414	15,350	47,035,496	465,656	1,138	78,233

BROOM CORN AND COMMERCIAL FERTILIZERS.

Counties.	Broom Corn.		Commercial Fertilizers.			
	Acres planted, 1897.	Pounds Broom Brush produced, 1897.	Pounds used during 1897.	Cost of for 1897.	Pounds bought for 1898.	Cost for 1898.
Adams	7	2,387	2,268,462	$26,322 00	895,600	$11,268 00
Allen	....	....	104,924	1,293 00	41,298	727 00
Ashland	1	400	2,095,100	22,464 00	277,752	3,692 00
Ashtabula	....	....	3,999,040	45,320 00	1,632,624	18,592 00
Athens	....	....	1,609,405	14,116 00	1,165,800	11,338 00
Auglaize	213	162,000	58,600	532 00	19,300	207 00
Belmont	10	2,320	2,140,275	20,990 00	379,866	4,374 00
Brown	14	2,693	1,218,577	28,582 00	344,157	4,250 00
Butler	27	13,800	214,100	2,406 00	51,600	562 00
Carroll	....	....	1,703,125	17,805 00	335,690	3,680 00
Champaign	92	21,650	841,820	8,949 00	623,500	7,017 00
Clark	....	....	646,800	7,862 00	155,100	1,805 00
Clermont	....	....	753,600	8,546 00	258,532	2,926 00
Clinton	....	1,610	665,048	8,102 00	259,168	5,974 00
Columbiana	1	800	3,255,009	31,967 00	565,720	5,893 00
Coshocton	....	....	1,163,050	10,436 05	310,211	3,032 50
Crawford	24	1,000	1,067,488	13,371 00	185,150	2,120 00
Cuyahoga	16	....	2,984,390	35,454 00	801,091	11,163 00
Darke	5	3,650	694,410	8,539 00	413,800	4,099 00
Defiance	6¼	3,200	57,450	725 00	3,400	37 00
Delaware	....	....	237,456	2,532 00	311,800	3,191 00
Erie	22	4,000	674,760	6,356 00	829,705	6,251 00
Fairfield	1	350	1,835,490	19,468 00	368,600	4,253 00
Fayette	16	6,000	782,171	7,349 00	644,400	5,161 00
Franklin	13	4,550	200,701	2,347 00	154,200	1,770 00
Fulton	3	1,700	104,900	1,023 00	5,369	50 00
Gallia	....	....	2,479,963	21,811 00	1,614,230	26,442 00
Geauga	....	....	2,313,150	28,323 00	1,090,178	13,544 00
Greene	2	500	261,940	2,624 00	35,600	380 00
Guernsey	1	800	1,789,000	19,531 00	298,950	3,172 00
Hamilton	....	....	....	....	....	734 00
Hancock	13	520	231,350	2,795 00	38,050	406 00
Hardin	4	1,000	34,850	142 00	60,000	240 00
Harrison	....	....	1,316,690	68,544 00	361,592	7,136 00
Henry	4	4,000	40,300	2,650 00	2,545	2,406 00
Highland	12	8,000	3,251,640	33,916 00	806,471	7,971 00
Hocking	2	2,090	2,027,768	23,609 00	401,990	6,785 00
Holmes	....	2,000	1,388,720	14,338 00	98,000	1,097 00
Huron	....	....	2,794,010	30,689 00	752,298	8,425 00
Jackson	3	....	1,934,568	19,112 00	890,376	8,106 00
Jefferson	....	....	1,447,120	15,046 00	208,800	5,907 00
Knox	....	....	1,867,825	18,586 00	446,612	5,113 00
Lake	....	....	550,429	104,166 00	239,240	35,138 00
Lawrence	4	3,700	205,350	2,756 00	198,900	1,984 00
Licking	5	3,150	1,346,860	14,205 00	481,400	5,216 00
Logan	....	....	193,890	2,070 00	82,800	922 00
Lorain	35	3,809	2,517,699	28,793 00	4,611,690	8,856 00
Lucas	....	....	81,400	929 00	19,400	245 00
Madison	....	....	8,000	77 00	42,700	467 00
Mahoning	....	....	3,992,194	37,705 00	1,223,789	19,691 00
Marion	....	....	81,700	861 00	45,800	519 00
Medina	....	....	4,399,290	46,707 00	529,650	5,320 00
Meigs	11	1,400	2,378,017	25,435 00	1,001,020	10,772 00
Mercer	4½	2,100	68,100	919 00	32,400	420 00
Miami	5	4,000	696,650	7,485 00	478,600	42,155 00
Monroe	⅙	25	1,890,260	19,612 00	446,525	5,961 00
Montgomery	23	1,400	2,175,490	16,742 00	1,389,984	13,639 00
Morgan	2	310	2,370,650	23,596 00	242,185	2,441 00
Morrow	....	....	1,811,375	15,795 00	181,790	3,876 00
Muskingum	9	300	3,258,748	29,557 00	548,860	6,489 00
Noble	4	2,000	1,000,100	10,569 00	387,050	4,031 00
Ottawa	....	....	7,400	93 00	4,500	164 00
Paulding	....	....	1,700	18 00	1,200	13 00
Perry	2	900	3,437,350	35,318 00	836,740	8,985 00
Pickaway	....	....	452,700	4,951 00	367,404	4,024 00
Pike	4	2,000	1,917,743	19,352 00	1,790,750	11,673 00
Portage	1	700	3,698,352	40,378 00	958,140	10,680 00

BROOM CORN AND COMMERCIAL FERTILIZERS — Concluded.

Counties.	Broom Corn.		Commercial Fertilizers.			
	Acres planted, 1897.	Pounds Broom Brush produced, 1897.	Pounds used during 1897.	Cost of for 1897.	Pounds bought for 1898.	Cost for 1898.
Preble	40	4,820	3,406,290	$33,821 00	2,042,400	$18,711 00
Putnam	40	15,000	2,600	37 00	....	....
Richland	1	700	2,745,460	23,161 00	274,640	2,671 00
Ross	5	3,000	1,335,642	14,142 00	1,233,600	12,732 00
Sandusky	....	....	284,400	3,412 00	49,114	860 00
Scioto	3	2,070	1,526,890	24,758 00	747,063	12,680 00
Seneca	....	....	1,900,840	20,415 00	1,116,300	10,512 00
Shelby	41	4,400	361,570	4,830 00	204,832	2,078 00
Stark	....	....	2,268,469	32,175 00	652,370	9,564 00
Summit	....	....	2,337,740	23,521 00	616,160	7,987 00
Trumbull	7	....	2,915,942	38,058 00	1,261,493	15,067 00
Tuscarawas	13	8,000	1,209,200	12,999 00	271,300	2,929 00
Union	7	2,500	62,900	746 00	19,000	233 00
Van Wert	....	....	1,600	18 00	1,000	13 00
Vinton	1½	100	1,407,600	14,080 00	744,750	7,592 00
Warren	....	....	562,750	7,650 00	187,350	2,434 00
Washington	....	....	3,375,175	36,795 00	2,106,470	22,486 00
Wayne	....	....	3,560,698	38,778 00	1,134,759	20,160 00
Williams	....	....	63,300	812 00	57,600	706 00
Wood	....	....	453,400	6,183 00	51,700	671 00
Wyandot	1	....	217,516	2,527 00	142,180	1,678 00
Totals	781	317,404	123,146,474	$1,481,583 05	47,194,733	$577,041 50

EGGS, MILK, BUTTER AND CHEESE.

Counties.	Eggs.		Milk.	Butter.		Cheese.	
	Number Dozens produced, 1897.	Number Dozens shipped beyond State, 1897.	Gallons sold for Family Use, 1897.	Pounds made in Home Dairies, 1897.	Pounds made in Factories and Creameries, 1897.	Pounds made in Home Dairies, 1897.	Pounds made in Factories and Creameries, 1897.
Adams	1,422,177	15	6,373	458,803	....	....	....
Allen	830,589	....	223,391	577,355	700	33,460	....
Ashland	796,850	....	174,215	465,677	147,011	115,840	12,600
Ashtabula	742,987	1,000	771,681	849,520	289,997	30,293	2,392,822
Athens	527,140	4,000	55,027	394,799	....	....	....
Auglaize	712,640	10,900	66,974	451,648	16,250	899	....
Belmont	747,001	6,310	492,683	738,091	46,700	15,910	....
Brown	937,518	30	48,545	590,304	....	....	....
Butler	657,257	170	430,755	782,988	....	32,250	....
Carroll	457,651	10,850	33,839	484,103	16,190	6,000	....
Champaign	525,335	42,020	513,901	513,765	129,460	7,025	....
Clark	538,676	....	443,777	643,411	7,109	200	....
Clermont	707,922	....	140,875	591,258	....	....	....
Clinton	527,121	19,133	45,405	360,890	38,715	250	76
Columbiana	764,316	34,750	1,181,784	735,866	775,001	1,180	529,540
Coshocton	729,382	14,779	206,991	549,479	250,600	300	66,200
Crawford	822,169	10	55,023	678,949	55,833	....	....
Cuyahoga	593,234	....	4,019,713	598,264	21,450	5,500	84,920
Darke	1,430,739	....	126,783	1,068,475	....	....	....
Defiance	677,805	128	64,252	469,943	50,410	....	....
Delaware	19,072	734,883	129,810	680,648	184,104	435	15
Erie	373,438	720	318,478	288,396	125,802	800	750,000
Fairfield	695,596	....	41,347	638,183	58,300	530	....
Fayette	....	451,468	93,215	255,430	20,000	....	....
Franklin	840,481	....	1,564,438	789,661	146,000	....	....
Fulton	812,291	....	116,045	480,650	64,223	800	1,330,831
Gallia	654,404	3,050	25,450	503,808	....	350	....
Geauga	559,243	....	372,751	381,454	897,448	575	2,597,751
Greene	641,791	....	103,685	686,649	....	2,400	....
Guernsey	527,510	....	52,990	682,480	56,630	36,800	....
Hamilton	413,298	....	2,555,941	462,255	107,405	11,260	2,850
Hancock	875,322	....	167,545	789,688	3,700	2,280	....
Hardin	896,801	50,000	136,805	349,825	21,523	1,000	....
Harrison	373,624	560	210,013	431,255	172,808	....	....
Henry	1,019,447	85,000	30,488	585,650	46,913	720	....
Highland	785,642	1,872,250	47,410	516,982	550	975	....
Hocking	364,392	....	12,415	275,554	....	....	....
Holmes	736,898	....	28,550	452,640	40,935	13,200	285,695
Huron	626,189	1,524	167,182	642,612	68,900	22,300	134,680
Jackson	352,990	....	13,798	267,970	....	200	....
Jefferson	414,592	4,650	389,431	606,652	80,696	14,000	38,400
Knox	753,611	....	63,677	684,952	87,816	1,120	2,000
Lake	175,488	120	876,768	309,836	600	....	50,000
Lawrence	286,794	2,610	25,619	276,836	400	50	....
Licking	1,024,412	900	194,887	907,066	29,850	6,400	....
Logan	683,677	....	162,525	455,403	227,067	9,490	200
Lorain	602,356	100	3,825,748	616,272	200,379	32,786	1,021,921
Lucas	398,003	....	1,090,674	403,082	37,650	40	....
Madison	478,332	....	172,130	284,284	8,000	....	....
Mahoning	516,235	29,930	532,317	701,499	766,504	22,590	439,753
Marion	688,530	....	67,608	431,888	....	280	....
Medina	663,767	8	379,145	905,042	98,012	27,592	466,513
Meigs	575,200	53,670	35,009	443,878	730	5,726	....
Mercer	841,785	300,000	266,024	407,116	54,357	200	....
Miami	543,479	....	210,313	588,598	600	16,200	....
Monroe	791,535	82,350	25,494	472,428	4,700	62,787	258,259
Montgomery	769,267	....	1,602,630	929,580	4,150	4,750	....
Morgan	875,054	....	28,111	553,060	....	950	....
Morrow	767,713	21,545	14,710	668,990	17,350	....	....
Muskingum	711,295	855	283,211	775,112	30,072	....	....
Noble	679,703	50,000	2,107	466,919	14,335	780	....
Ottawa	342,490	....	19,742	305,804	73,074	....	....
Paulding	482,821	25,150	15,145	241,605	1,475	100	....
Perry	510,630	....	70,950	435,165	....	....	....
Pickaway	531,419	....	71,340	333,762	8,850	....	....
Pike	373,594	....	7,458	....	....	....	....
Portage	629,534	....	1,054,867	694,132	177,839	7,280	1,577,190
Preble	740,996	600	32,220	709,697	17,175	2,450	....
Putnam	920,301	68,742	70,455	552,880	78,503	23,420	....

EGGS, MILK, BUTTER AND CHEESE — Concluded.

Counties.	Eggs.		Milk.	Butter.		Cheese.	
	Number Dozens produced, 1897.	Number Dozens shipped beyond State, 1897.	Gallons sold for Family Use, 1897.	Pounds made in Home Dairies, 1897.	Pounds made in Factories and Creameries, 1897.	Pounds made in Home Dairies, 1897.	Pounds made in Factories and Creameries, 1897.
Richland	809,625	65,120	237,260	785,769	3,300	12,884	....
Ross	436,155	550	62,436	369,354	7,360	6,000	....
Sandusky	593,441	....	538,990	515,088	2,714	305	25
Scioto	296,869	500	175,775	326,579	50,840	....	....
Seneca	721,771	....	94,980	674,174	36,757	....	8,000
Shelby	592,978	....	56,345	356,628	58,845	....	....
Stark	1,032,250	247	753,362	933,902	67,846	35,246	416,160
Summit	492,937	25	2,820,691	655,019	176,589	100	1,106,400
Trumbull	801,839	19,465	542,056	992,209	175,221	8,575	2,937,553
Tuscarawas	494,551	39,125	301,684	509,455	44,096	18,550	576,184
Union	786,101	7,500	233,130	506,801	57,662	200	....
Van Wert	949,750	....	20,730	424,798	33,800	....	....
Vinton	327,147	....	1,168	238,010	....	....	....
Warren	573,395	220	210,050	541,094	690	50	....
Washington	1,002,214	9,510	195,299	672,764	34,800	4,980	....
Wayne	970,092	1,850	335,448	875,617	36,455	53,595	187,910
Williams	680,591	....	42,326	450,007	69,810	....	....
Wood	929,376	....	253,076	685,005	614,145	135	....
Wyandot	611,328	90,000	39,410	427,839	29,940	550	33,000
Totals	57,591,961	4,218,932	33,784,884	48,263,028	7,381,821	723,893	17,307,448

SORGHUM, MAPLE AND BEES.

Counties.	Sorghum.			Maple in 1898.			Bees.	
	Acres Planted, 1897.	Pounds of Sugar, 1897.	Gallons of Syrup, 1897.	Number of Trees from which Sugar or Syrup was made.	Pounds of Sugar.	Gallons of Syrup.	Number of Hives, 1897.	Pounds of Honey, 1897.
Adams	137	113	10,294	6,197	15	1,358	1,390	18,546
Allen	16¾	175	1,844	12,171	80	1,725	2,103	26,259
Ashland	6½	43	363	98,728	17,547	13,708	1,350	25.845
Ashtabula	....	....	....	244,200	40,767	26,576	1,676	62,928
Athens	21	....	1,687	5.210	646	755	739	12,291
Auglaize	152	11	10,816	14,260	1	2,665	1,655	21,497
Belmont	74	183	3.103	4,391	62	1,636	1,638	26,420
Brown	44	1,580	1,111	675	....	166	931	9,892
Butler	11	90	522	2,308	....	635	573	13,586
Carroll	28	....	1,513	641	11	306	759	17,323
Champaign	20	....	1,225	15,498	1,792	4,850	1,160	31,419
Clark	21	....	2,057	317	....	136	624	18,676
Clermont	44	300	2,561	1,160	32	438	582	15,345
Clinton	14	90	900	22,757	5,400	7,673	1,932	19,771
Columbiana	3	8	118	54,947	500	8,957	654	11,258
Coshocton	32½	38	1.431	1,983	43	824	1,947	26,160
Crawford	20½	....	1,028	29,529	495	5,116	1,040	18,133
Cuyahoga	....	....	....	73,400	5,490	12,279	1,076	10,382
Darke	204	....	15,401	11,343	....	2,079	2,090	49,676
Defiance	107	....	8,304	3,841	35	540	842	28,108
Delaware	6	....	....	183	84,835	938	12,239	410
Erie	2	10	147	11,470	1,310	1,571	394	7,817
Fairfield	47	30	2,053	7,277	571	1,879	598	7,899
Fayette	3	....	377	825	....	214	330	5,024
Franklin	17	....	964	2,310	90	418	677	23,230
Fulton	17½	....	1,580	4,174	12	654	1,096	9,242
Gallia	321	74	35,934	414	1,000	42	1,160	19,558
Geauga	....	....	9	573,264	75,398	93,667	1,062	35,985
Greene	4	....	175	26,408	1,400	7,956	598	9,384
Guernsey	59	....	4,430	147	....	82	1,004	20,507
Hamilton	3	....	449	....	....	232	390	9,552
Hancock	26½	45	1,393	27,485	390	4,340	2,410	47,018
Hardin	17	....	1,058	5,277	660	846	1,197	23,951
Harrison	10	158	447	1,582	30	649	410	7,334
Henry	45	60	3,285	3,988	70	833	847	17,797
Highland	19½	105	1,333	10,407	163	2,808	353	7,079
Hocking	47	....	3,698	407	32	157	547	3,339
Holmes	11	45	879	5,747	480	1,027	816	16,922
Huron	18	81	747	67,879	2,634	7,808	1,344	42,837
Jackson	57	....	2,888	69	95	30	413	5,713
Jefferson	14	95	563	4,525	40	1,463	428	5,226
Knox	3	....	84	31,808	3,389	7,654	875	19,189
Lake	....	....	....	21,253	5,761	2,520	326	7,336
Lawrence	501	....	61,068	265	60	186	1,136	17,493
Licking	20	....	1,611	41,342	45	9,226	1,012	13,297
Logan	25	....	1,349	106,176	58,038	32,262	1,758	31,449
Lorain	23	....	1,262	92,794	15,067	12,281	1,070	16,830
Lucas	4½	....	342	235	....	49	521	19,132
Madison	10	130	627	....	....	16	927	24,272
Mahoning	1	....	6	122,786	3,496	19,561	1,018	38,054
Marion	5¾	50	446	4,921	1,851	588	649	20,296
Medina	3	200	93	205,485	21,125	29,327	1,450	30,269
Meigs	54	30	4,618	200	20	63	827	11,206
Mercer	258	....	10,943	1,035	40	172	1,169	19,645
Miami	29	....	1,331	8,119	70	1,517	473	12,223
Monroe	284	....	22,121	678	680	118	1,056	19,425
Montgomery	41	....	4,096	12,388	....	3,170	686	15,469
Morgan	26	....	2,656	463	15	126	826	10,999
Morrow	10¼	10	176	97,311	4,906	17,841	683	13,561
Muskingum	30	....	1,541	1,104	....	357	1,416	26,172
Noble	150	840	9,655	520	215	94	1,026	45,108
Ottawa	1	....	116	....	....	....	202	10,095
Paulding	61½	....	3,586	690	172	150	1,650	29,990
Perry	92	55	2,460	15,394	445	1,850	824	11,210
Pickaway	12	....	980	1,538	....	595	627	6,670
Pike	125	....	8,360	886	195	177	702	6,405

SORGHUM, MAPLE AND BEES — Concluded.

Counties.	Sorghum.			Maple in 1898.			Bees.	
	Acres Planted, 1897.	Pounds of Sugar, 1897.	Gallons of Syrup, 1897.	Number of Trees from which Sugar or Syrup was made.	Pounds of Sugar.	Gallons of Syrup.	Number of Hives, 1897.	Pounds of Honey, 1897.
Portage	7	25	156	397,716	6,223	76,392	885	22,402
Preble	35¼	61	3,271	14,616	....	2,760	699	11,331
Putnam	119½	....	7,873	4,816	96	946	2,053	46,887
Richland	9	....	384	87,976	4,205	12,994	1,233	19,210
Ross	20¼	175	1,716	7,199	63	2,081	758	12,191
Sandusky	20	....	2,243	1,540	20	223	624	17,675
Scioto	116	....	11,413	80	....	200	560	7,785
Seneca	25½	6	1,288	30,906	260	3,764	840	18,506
Shelby	114	....	6,827	1,880	....	452	922	15,251
Stark	12⅝	....	673	39,576	324	6,633	921	17,503
Summit	....	....	....	52,651	7,045	8,074	827	20,439
Trumbull	6	11	1,958	227,702	15,884	34,099	1,469	35,985
Tuscarawas	33	16	1,231	3,026	20	774	916	16,135
Union	24	234	1,118	31,863	4,057	5,432	815	26,962
Van Wert	39	....	2,659	596	....	117	912	23,196
Vinton	71	80	5,008	724	70	295	640	7,544
Warren	2	....	196	7,095	....	5,350	414	7,317
Washington	168	55	12,192	740	10	245	915	20,207
Wayne	17½	227	1,164	32,138	2,408	5,279	1,890	38,605
Williams	15	....	1,707	43,335	835	5,812	578	8,818
Wood	33	247	1,259	3,886	75	537	856	16,848
Wyandot	12¼	....	419	11,286	109	1,956	1,033	25,698
Totals	4,370	5,789	330,969	2,125,132	399,420	637,351	96,743	1,701,629

LANDS OWNED IN 1897.

Counties.	Number of Acres cultivated.	Number of Acres Pasture.	Number of Acres Woodland.	Number of Acres lying waste.	Total Number of Acres owned.
Adams	84,480	95,879	73,155	22,625	276,139
Allen	137,203¾	22,817¾	34,662½	695	195,379
Ashland	144,767⅞	36,009¼	36,406½	3,808¾	220,992⅜
Ashtabula	130,244	120,234	46,181	5,438	302,097
Athens	45,531	118,177	34,983	5,792	204,483
Auglaize	134,765	22,313	38,753	2,326	198,157
Belmont	92,884	134,974	35,555	9,907	273,320
Brown	116,731	104,168	29,244	10,308	260,451
Butler	139,988	24,423	20,806	9,926	195,143
Carroll	70,923	108,452	29,029	3,168	211,572
Champaign	146,039	31,136	25,251	2,393	204,819
Clark	124,525	28,602	17,927	2,483	173,537
Clermont	105,331	65,354	20,670	16,307	207,662
Clinton	160,289	53,722	27,451	3,941	245,403
Columbiana	143,300	73,348	36,672	3,402	256,722
Coshocton	78,204¾	143,785	45,566½	2,300½	269,856¾
Crawford	143,501½	38,545	34,222¾	1,037½	217,306¾
Cuyahoga	90,712	53,403	15,189	5,358	164,662
Darke	257,262	24,638	48,146	8,861	338,907
Defiance	123,886	10,612	43,352	1,221	179,071
Delaware	132,197	70,553	30,123	2,437	235,310
Erie	82,948	17,535	8,747	4,980	114,210
Fairfield	127,181	87,034	29,633	11,142	254,990
Fayette	101,634	89,825	19,383	4,530	215,372
Franklin	161,395	52,347	21,347	8,445	243,534
Fulton	129,973	18,608	31,830	952	181,363
Gallia	67,979	121,946	36,861	13,690	240,476
Geauga	73,619	93,737	36,364	1,713	205,433
Greene	152,818	36,687	27,430	4,800	221,735
Guernsey	73,738	151,323	39,521	2,689	267,271
Hamilton	60,303	24,455	6,841	5,376	96,975
Hancock	189,253	34,532	48,194	1,838	273,817
Hardin	129,090	29,525	29,867	3,196	191,678
Harrison	53,796	109,660	23,408	1,695	188,559
Henry	138,583	6,932	35,312	996	181,823
Highland	116,335	132,456	40,381	7,094	296,266
Hocking	43,371	101,368	41,467	8,673	194,879
Holmes	113,574½	41,783	34,896½	5,479	195,733
Huron	161,758	62,395	30,044	3,636	257,833
Jackson	49,173	93,293	22,419	12,659	177,544
Jefferson	91,841	82,181	35,598	4,277	213,897
Knox	120,318	119,318	41,262	1,370	282,268
Lake	55,931	30,135	12,948	1,513	100,527
Lawrence	47,465	48,245	48,549	23,716	167,975
Licking	135,609	186,238	44,150	5,262	371,259
Logan	149,949	40,041	33,278	1,319	224,587
Lorain	124,930	87,132	23,865	2,292	238,219
Lucas	77,241	9,136	12,930	5,213	104,520
Madison	105,524	68,058	12,645	1,085	187,312
Mahoning	106,575	65,159	29,310	1,718	202,762
Marion	110,938	47,395	19,594	891	178,818
Medina	130,427	57,940	29,195	1,115	218,677
Meigs	69,218	96,181	37,727	4,999	208,125
Mercer	151,653	24,704	45,754	3,113	225,224
Miami	141,813	7,001	17,289	1,805	167,908
Monroe	83,598	103,312	45,212	12,778	244,900
Montgomery	160,556	19,683	22,408	7,572	210,219
Morgan	56,534	133,986	33,032	5,590	229,142
Morrow	112,357	78,172	35,019	1,746	227,294
Muskingum	93,427	194,081	44,993	6,739	339,240
Noble	61,854	133,114	26,482	3,638	225,088
Ottawa	84,456	17,636	11,295	4,655	118,042
Paulding	92,469½	7,388½	31,917.9	616½	132,392⅖
Perry	52,631	108,537	23,861	5,050	190,079
Pickaway	129,669	65,834	18,854	6,595	220,954
Pike	59,102	43,043	61,397	10,863	174,405

LANDS OWNED IN 1897 — Concluded.

Counties.	Number of Acres cultivated.	Number of Acres Pasture.	Number of Acres Woodland.	Number of Acres lying waste.	Total Number of Acres owned.
Portage	127,132	86,112	38,073	5,152	256,469
Preble	166,387	26,500	33,941	8,433	235,261
Putnam	159,144	16,729	42,332	1,930	220,135
Richland	181,826	30,697	46,544	3,565	262,632
Ross	128,347	88,828	46,375	16,592	280,142
Sandusky	139,760	21,326	25,715	7,032	193,833
Scioto	81,110	66,590	199,638	31,704	379,042
Seneca	208,555	25,222	40,961	1,712	276,450
Shelby	172,991	31,661	45,882	4,061	254,595
Stark	211,420	40,164	30,483	5,447	287,514
Summit	127,337	50,015	19,364	7,249	203,965
Trumbull	130,800	137,694	45,015	3,863	317,371
Tuscarawas	120,065	112,722	43,060	9,501	285,348
Union	118,221	59,652	27,131	693	205,697
Van Wert	143,962	19,952	39,457	1,073	204,444
Vinton	34,303	86,190	38,235	7,238	165,966
Warren	135,378	41,362	24,646	4,683	206,069
Washington	116,268	131,368	57,974	15,188	320,798
Wayne	211,352	33,173	39,209	2,812	286,546
Williams	160,872	31,250	27,672	1,484	221,278
Wood	196,571	24,716	36,540	2,445	260,272
Wyandot	129,391¼	50,229½	24,697¼	2,951	207,269
Totals	10,436,572	5,772,389	3,058,799	497,650	19,765,410

TABLES OF COMPARATIVE STATISTICS AS COMPILED BY THE SECRETARY OF AGRICULTURE.

COMPARATIVE TABLE SHOWING PRODUCTION OF WHEAT IN OHIO FOR EIGHT YEARS.

Counties.	Number of Bushels.							
	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Adams	241,235	97,769	199,005	340,920	273,430	270,802	218,724	185,969
Allen	328,024	318,955	451,775	540,700	440,895	474,100	652,237	299,645
Ashland ...	597,622	274,753	343,502	640,105	688,750	517,065	589,923	623,570
Ashtabula .	200,208	69,913	132,485	224,074	252,818	154,956	229,553	240,086
Athens	202,247	191,676	130,891	178,271	159,048	160,508	120,636	104,455
Auglaize ...	399,480	365,547	566,304	767,327	548,451	654,145	733,753	419,205
Belmont ...	406,539	331,471	261,776	383,747	406,877	277,229	258,403	277,661
Brown	251,883	94,296	290,175	383,181	338,964	377,716	305,053	259,894
Butler	916,826	258,458	543,739	956,238	921,809	840,645	1,112,126	732,680
Carroll	250,066	138,622	122,356	239,344	276,070	227,240	208,935	209,951
Champaign .	514,096	275,079	437,118	974,493	838,569	777,953	945,630	616,851
Clark	539,301	319,394	442,127	749,065	715,374	641,003	710,434	435,755
Clermont ..	162,288	49,276	216,692	296,308	271,791	279,173	212,861	196,683
Clinton	493,237	105,842	367,423	704,341	613,159	622,800	637,352	482,265
Columbiana.	431,575	220,331	166,151	398,901	454,183	349,139	338,692	340,010
Coshocton .	550,925	131,234	243,994	496,591	518,748	423,543	421,082	409,775
Crawford ..	482,632	195,698	344,773	512,106	519,764	374,047	455,547	406,439
Cuyahoga ..	162,382	79,742	141,978	226,981	242,137	168,863	193,789	214,231
Darke	774,220	572,758	796,963	1,462,139	1,055,095	1,126,323	1,378,656	603,973
Defiance ..	252,654	284,279	452,197	426,500	458,224	364,418	586,028	190,830
Delaware ..	208,277	62,604	159,482	353,012	344,522	303,055	353,098	244,053
Erie	414,918	182,373	237,095	379,368	468,621	345,651	429,713	371,272
Fairfield ...	679,559	222,234	406,864	741,640	739,855	782,679	775,257	509,600
Fayette	646,045	105,151	351,526	614,692	628,196	643,949	603,418	429,667
Franklin ...	563,884	70,477	363,176	643,579	727,669	772,327	772,408	633,671
Fulton	365,356	322,780	436,418	443,658	509,335	413,906	608,932	295,843
Gallia	242,274	206,417	192,651	261,210	230,067	234,102	175,318	140,911
Geauga	156,257	59,990	66,521	150,508	163,120	117,593	142,908	159,296
Greene	616,485	37,382	620,807	959,893	862,980	883,847	845,539	570,224
Guernsey ..	277,848	192,155	162,336	246,724	240,726	220,584	157,821	162,328
Hamilton ..	260,505	48,290	168,583	259,224	280,770	300,625	286,532	199,246
Hancock ..	626,425	401,044	695,428	914,310	711,883	624,546	926,414	504,160
Hardin	289,929	219,319	342,380	506,589	424,988	431,393	536,778	354,871
Harrison ..	234,257	159,966	143,405	236,853	239,924	211,911	154,149	155,858
Henry	518,881	464,426	583,984	652,101	672,735	407,593	669,613	312,936
Highland ..	535,638	141,729	352,977	594,279	567,631	560,235	497,366	457,914
Hocking ...	189,936	200,905	108,986	148,365	159,295	156,081	113,749	100,067
Holmes	449,842	147,498	265,621	325,125	575,048	445,362	559,733	533,252
Huron	541,346	300,953	423,678	561,280	648,017	418,343	458,566	468,431
Jackson	141,424	109,462	116,945	165,213	124,300	120,344	84,674	84,572
Jefferson ..	293,037	243,564	151,436	259,595	256,503	307,270	213,248	188,731
Knox	621,728	166,459	301,897	553,667	644,339	521,833	516,113	483,020
Lake	91,714	56,076	56,733	101,012	112,111	92,377	100,879	93,231
Lawrence ..	67,438	51,028	82,561	129,050	102,511	91,688	82,248	61,683
Licking	416,127	188,523	276,716	715,916	741,844	615,453	563,004	501,495
Logan	328,759	218,496	253,941	610,978	454,599	514,234	689,726	449,084
Lorain	409,357	173,616	265,535	404,275	436,815	272,669	403,304	409,644
Lucas	262,385	196,192	198,909	248,477	297,543	214,198	249,114	160,402
Madison ...	420,933	48,078	256,573	673,334	622,718	527,967	566,281	351,090
Mahoning ..	408,659	119,012	117,701	303,894	402,860	217,353	206,037	267,871
Marion	323,423	136,513	251,082	523,426	483,642	873,453	457,477	307,063
Medina	429,131	119,134	289,969	449,172	561,547	373,797	431,427	447,847
Meigs	287,824	229,454	205,729	274,612	250,888	254,014	174,102	154,280
Mercer	367,945	360,080	556,136	764,392	515,740	573,443	706,310	319,399
Miami	668,198	565,799	496,159	1,082,571	951,112	867,635	964,678	545,617
Monroe	272,828	219,341	201,800	268,166	272,899	257,409	211,844	186,362
Montgomery	564,339	373,714	450,381	893,754	820,514	761,201	935,819	557,372
Morgan ...	228,180	256,094	209,280	231,053	177,113	182,734	130,931	136,591
Morrow	241,085	155,373	171,021	272,213	319,824	242,826	241,686	195,060
Muskingum	429,171	289,245	241,458	421,218	474,127	373,787	254,933	260,184
Noble	232,364	175,716	193,106	223,755	190,761	193,824	146,068	154,582
Ottawa	323,890	189,782	304,214	321,063	340,903	149,681	362,019	205,321

COMPARATIVE TABLE SHOWING PRODUCTION OF WHEAT IN OHIO FOR EIGHT YEARS — Concluded.

Counties.	Number of Bushels.							
	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Paulding ...	120,950	205,530	395,159	280,151	237,331	197,852	285,522	82,380
Perry	306,435	233,332	193,292	262,864	248,519	267,572	198,320	168,604
Pickaway ...	951,527	167,063	628,283	995,617	661,038	934,056	916,796	715,429
Pike	228,109	138,219	202,996	275,604	202,270	206,335	180,950	137,324
Portage	370,609	130,141	179,519	372,139	422,489	318,225	338,368	424,644
Preble	601,159	459,883	568,561	922,364	723,090	621,057	746,919	518,874
Putnam ...	561,813	444,928	730,761	862,626	614,237	516,528	774,959	396,097
Richland ...	617,176	316,239	423,980	627,919	727,374	531,424	598,408	600,161
Ross	771,331	328,800	464,813	883,977	640,796	752,274	650,807	555,550
Sandusky ..	740,777	472,128	677,338	873,048	792,030	589,956	830,766	619,369
Scioto	263,944	152,346	153,666	247,476	215,339	202,243	138,537	119,088
Seneca	874,190	470,361	766,315	1,065,511	1,055,372	767,815	1,141,921	809,452
Shelby	351,181	321,904	452,382	786,867	541,761	605,196	727,943	474,314
Stark	900,724	299,291	447,385	903,250	1,021,223	786,472	860,450	937,528
Summit	525,724	241,912	247,642	530,332	599,064	437,499	479,843	551,080
Trumbull ..	245,415	55,433	122,770	255,749	285,943	171,013	205,615	267,877
Tuscarawas.	500,700	201,480	299,399	503,875	527,635	456,942	453,506	465,401
Union	298,462	41,869	160,091	393,961	396,265	348,025	422,619	216,774
Van Wert ..	365,988	455,580	618,318	703,355	516,542	413,270	579,746	225,277
Vinton	107,085	88,650	78,035	106,679	112,742	100,673	69,531	68,665
Warren	411,365	44,267	346,980	585,264	576,531	597,410	616,967	427,463
Washington.	417,713	425,406	399,742	482,794	434,150	425,255	301,685	269,281
Wayne	945,872	306,584	483,730	1,117,768	1,183,590	772,890	948,999	995,573
Williams ..	286,815	221,835	367,543	445,074	486,788	429,240	609,117	287,447
Wood	724,633	505,318	638,653	805,540	818,235	556,859	802,827	417,535
Wyandot ..	418,757	221,762	329,670	533,212	436,494	424,276	472,157	388,360
Total prod.	36,718,686	19,511,788	28,759,647	45,587,534	43,121,599	38,381,598	42,351,767	31,509,676
Total area	2,273,712	2,574,364	2,483,855	2,429,082	2,526,370	2,879,094	2,613,281	2,557,917

Average area for 8 years 2,542,209 acres.
Average product for 8 years 35,742,787 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF BARLEY IN OHIO FOR EIGHT YEARS.

Counties.	Number of Bushels.							
	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Adams	130	....	36	519	154	400	76	320
Allen	3,854	1,662	1,216	532	1,241	203	1,351	1,253
Ashland	3,640	3,222	4,274	8,647	3,822	3,116	6,817	7,077
Ashtabula	1,637	1,489	1,538	1,807	1,340	2,637	10,549	6,692
Athens	....	....	6	....	....	....	170	....
Auglaize	6,590	21,324	31,715	36,478	23,972	22,492	25,798	21,064
Belmont	1,429	1,547	1,962	1,484	1,047	776	1,289	1,226
Brown	....	40	....	....	....	185	....	400
Butler	62,521	56,595	153,324	119,361	99,333	51,755	43,301	46,924
Carroll	55	76	120	124	50	75	375	30
Champaign	640	430	824	1,756	30	220	1,115	1,771
Clark	569	1,247	6,535	8,205	5,617	2,890	6,885	3,972
Clermont	8	....	219	36	100	20	10	....
Clinton	1,110	338	1,012	2,831	447	1,656	1,893	2,124
Columbiana	503	345	335	367	432	693	1,881	676
Coshocton	15	125	14	18	21	26	35	130
Crawford	4,668	5,827	3,689	6,319	2,543	4,432	5,198	5,726
Cuyahoga	194	51	....	497	428	250	1,020	1,046
Darke	13,473	32,088	31,212	50,109	16,046	16,632	24,320	10,927
Defiance	21,679	18,594	17,928	15,718	9,507	4,638	12,960	18,207
Delaware	200	25	....	....	75	300	....	130
Erie	18,392	13,394	19,116	28,783	22,948	23,621	45,587	42,634
Fairfield	895	2,144	1,323	1,372	145	770	746	2,021
Fayette	466	....	206	300	300	275	....	....
Franklin	1,000	32	24	1,739	350	6	....	70
Fulton	6,962	5,118	9,096	3,193	2,997	2,950	19,105	48,861
Gallia	3	....	....	....	....	....	120	....
Geauga	198	63	174	159	....	189	1,067	1,110
Greene	2,254	225	6,158	7,378	4,981	1,911	4,053	3,065
Guernsey	829	1,063	41	337	112	175	244	107
Hamilton	14,597	7,056	32,062	80,933	109,582	8,501	13,271	8,703
Hancock	4,032	4,933	4,565	2,400	432	433	1,357	2,283
Hardin	336	....	50	122	72	1,040	570	688
Harrison	1,170	460	260	159	83	290	228	193
Henry	40,834	20,785	13,096	7,468	3,709	1,104	7,450	16,521
Highland	26	464	1,180	894	223	....	185	215
Hocking	....	97	....	308	180	165	69	38
Holmes	1,161	736	829	1,689	915	634	2,191	663
Huron	8,828	4,933	5,552	10,597	5,362	4,972	12,153	16,456
Jackson	....	....	4	....	....	....	10	....
Jefferson	1,623	1,817	141	1,184	882	2,101	442	753
Knox	84	211	1,462	449	151	48	496	2,072
Lake	417	690	2,728	2,950	949	2,442	6,415	6,599
Lawrence	....	48	....	....	....	....	....	....
Licking	684	....	109	3,490	369	140	430	1,675
Logan	2,215	1,811	2,321	8,521	1,777	1,530	2,107	863
Lorain	742	518	1,216	2,810	5,101	2,680	8,590	6,578
Lucas	8,544	8,461	6,968	6,043	5,665	6,034	16,072	35,525
Madison	305	60	389	1,600	1,387	3,828	4,009	930
Mahoning	49	230	93	417	792	246	876	499
Marion	92	460	578	1,045	....	448	2,275	3,679
Medina	1,098	57	200	22	132	294	999	2,527
Meigs	628	1,000	862	1,274	1,295	743	432	611
Mercer	5,463	26,828	41,492	39,343	20,486	17,408	15,053	8,078
Miami	4,119	12,296	13,661	21,575	12,299	11,803	14,601	14,454
Monroe	....	....	....	10	....	20	40	....
Montgomery	9,460	14,026	30,299	33,480	19,980	23,436	24,480	23,538
Morgan	2	41	61	151	98	28	....	91
Morrow	....	84	464	181	262	258	480	1,023
Muskingum	225	1,459	1,467	3,209	1,108	900	515	770
Noble	100	50	425	60	....	....	....	....
Ottawa	52,933	61,266	47,118	27,782	20,204	16,049	23,347	42,005
Paulding	32,166	6,611	2,546	862	569	165	365	2,316
Perry	....	80	87	251	164	123	72	35
Pickaway	1,200	....	1,300	627	....	378	22	1,897
Pike	660	....	....	192	172	145	5,150	418
Portage	....	156	1,621	609	45	325	1,615	790
Preble	2,046	8,087	12,878	23,155	9,038	8,711	6,846	5,827
Putnam	29,547	9,386	6,668	5,604	989	314	1,695	6,114
Richland	5,873	7,412	10,332	18,907	10,933	7,468	11,344	11,655

COMPARATIVE TABLE SHOWING PRODUCTION OF BARLEY IN OHIO FOR EIGHT YEARS.—Concluded.

Counties.	Number of Bushels.							
	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Ross	400	15	3,961	3,491	211	200	110	250
Sandusky	5,425	4,566	7,244	9,064	3,418	4,456	11,773	12,437
Scioto	1,105	500	1,249	195	....	1,025	1,290	1,120
Seneca	780	151	3,352	2,061	1,491	802	2,237	5,446
Shelby	8,001	33,949	60,875	42,373	19,917	19,249	23,207	21,402
Stark	806	899	1,897	1,657	1,064	2,978	2,720	2,228
Summit	776	450	415	491	105	110	985	491
Trumbull	75	16	214	175	300	156	108	115
Tuscarawas	1,162	51	56	182	....	37	1,742	1,114
Union	118	....	26	3	....	90	139	258
Van Wert	41,948	10,410	9,143	7,110	3,281	1,946	7,236	4,970
Vinton	250	....	....	....	....	....	....	....
Warren	12,217	9,934	30,365	16,895	1,192	19,232	14,333	16,125
Washington	....	301	....	....	....	....	87	....
Wayne	3,015	689	1,116	934	398	160	1,457	1,402
Williams	14,547	10,164	6,297	3,483	2,347	1,408	2,839	8,083
Wood	42,991	21,091	12,622	18,404	14,936	18,449	36,815	47,873
Wyandot	516	....	370	610	....	345	114	1,890
Total product.	519,305	462,859	676,383	715,570	480,986	339,140	509,337	579,849
Total area.....	21,008	32,563	43,313	32,179	15,581	14,685	20,884	31,446

Average area for 8 years 26,457 acres.
Average product for 8 years 535,429 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF RYE IN OHIO FOR EIGHT YEARS.

Counties.	Number of Bushels.							
	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Adams	6,914	2,410	2,381	1,851	1,772	2,108	2,933	1,717
Allen	3,635	6,242	7,275	8,415	3,853	9,247	35,881	6,723
Ashland	13,216½	4,951	3,270	2,865	2,412	1,523	3,391	4,000
Ashtabula	8,288	6,214	10,454	12,018	7,964	5,648	8,406	7,210
Athens	1,835	2,606	1,167	134	242	767	545	305
Aulgaize	5,629	4,709	4,739	7,711	4,741	8,988	22,682	14,631
Belmont	9,206	17,825	5,756	3,822	1,756	1,878	1,028	789
Brown	12,668	4,432	8,346	4,994	3,734	5,938	5,454	6,761
Butler	6,298	1,800	2,212	3,347	1,254	770	1,264	1,897
Carroll	6,454	3,074	2,034	1,834	1,256	1,344	1,733	2,188
Champaign	4,463	1,815	2,881	5,771	4,111	2,302	9,391	4,336
Clark	9,406	11,732	13,623	16,788	16,145	6,752	15,964	8,735
Clermont	10,649	4,011	13,968	10,816	7,190	10,814	13,115	12,619
Clinton	8,403	2,269	1,847	2,193	1,174	1,901	3,979	3,814
Columbiana	7,634	3,648	3,372	3,778	2,699	2,700	4,655	4,246
Coshocton	26,262	11,619	8,606	4,935	2,053	1,467	3,246	3,928
Crawford	3,784	1,235	5,579	5,697	4,849	1,933	3,569	3,135
Cuyahoga	15,982	9,038	12,520	22,729	15,606	10,951	8,459	14,557
Darke	16,759	15,950	10,198	16,612	8,092	11,164	31,252	11,745
Defiance	3,226	6,183	11,584	6,986	3,875	4,732	16,287	2,441
Delaware	3,273	1,880	2,295	2,986	1,825	817	5,427	3,578
Erie	13,591	12,477	12,656	10,682	6,447	3,706	5,798	2,372
Fairfield	15,157	7,189	4,061	3,203	1,618	3,738	7,894	7,411
Fayette	11,725	5,466	7,154	5,255	2,246	3,351	6,291	6,628
Franklin	21,017	4,271	3,658	3,169	1,289	648	3,851	6,872
Fulton	10,546	16,193	15,973	10,702	12,577	5,541	19,191	18,869
Gallia	2,121	1,403	1,446	491	367	751	1,142	1,088
Geauga	5,335	2,415	1,437	1,830	1,089	775	679	1,524
Greene	8,228	4,091	7,242	9,254	4,396	6,310	13,074	4,646
Guernsey	6,524	4,073	1,801	2,114	1,185	2,519	2,493	3,189
Hamilton	17,581	3,460	12,753	13,162	12,974	10,525	14,316	10,390
Hancock	6,529	6,173	17,601	17,067	15,406	14,030	47,166	22,293
Hardin	3,527	2,825	3,087	8,477	11,414	10,107	22,617	13,936
Harrison	1,414	1,501	1,403	892	133	248	356	280
Henry	58,383	67,203	74,818	111,350	69,865	42,578	98,934	45,780
Hihgland	19,533	4,778	5,362	3,879	3,432	3,478	7,375	10,667
Hocking	2,157	1,740	1,097	1,314	915	1,006	1,009	1,054
Holmes	17,048	6,322	7,495	7,500	4,170	2,119	4,336	5,551
Huron	8,907	3,697	6,816	5,587	4,654	2,391	9,314	4,235
Jackson	802	1,036	384	100	40	92	86	92
Jefferson	2,731	4,814	1,521	741	692	602	844	800
Knox	20,500	7,931	5,467	3,019	2,260	1,701	4,300	6,851
Lake	10,830	12,884	12,658	17,833	8,909	7,400	7,550	11,627
Lawrence	454	615	934	782	603	325	243	228
Licking	37,155	22,547	9,617	5,394	2,144	3,189	7,328	13,057
Logan	7,037	5,015	5,287	8,614	4,357	4,867	14,436	5,974
Lorain	7,570	5,179	4,329	4,529	2,561	921	628	1,448
Lucas	22,263	24,206	37,140	28,777	24,613	17,630	33,165	18,237
Madison	7,725	3,008	4,765	7,666	3,529	4,658	10,865	6,133
Mahoning	12,813	2,646	1,683	4,232	5,415	2,651	2,855	3,221
Marion	2,951	1,288	3,092	4,267	3,636	2,122	3,883	1,728
Medina	21,939	6,383	4,276	4,133	2,120	474	814	1.425
Meigs	2,420	1,876	778	357	450	563	115	574
Mercer	9,263	16,239	12,035	20,885	8,587	16,089	69,803	17,514
Miami	7,623	9,198	5,046	4,524	2,776	3,100	10,439	3,914
Monroe	11,289	13,562	4,073	2,696	1,937	2,707	2,547	2,345
Montgomery	5,470	5,062	3,504	4,700	4,139	7,314	9,720	6,358
Morgan	2,163	5,232	2,929	2,016	780	1,007	1,375	1,255
Morrow	9,990	4,998	7,819	6,551	9,622	7,179	11,522	9,203
Muskingum	12,737	15,952	6,280	4,816	4,017	6,721	5,543	7,675
Noble	3,109	4,830	2,171	871	818	563	540	1,216
Ottawa	10,449	9,734	22,332	14,014	11,647	6,533	12,810	11,955
Paulding	6,633	8,802	12,905	8,897	6,943	9,987	28,907	5,811
Perry	4,482	5,701	2,220	1,993	1,933	2,734	2,325	2,538
Pickaway	14,263	3,216	4,163	2,106	780	1,124	3,144	13,324
Pike	2,246	968	511	522	67	19	80	457
Portage	14,599	5,328	3,997	3,708	1,927	675	753	1,884
Preble	5,793	5,216	3,112	795	4,900	2,744	7,526	3,369
Putnam	8,633	11,088	24,673	22,751	24,415	21,602	65,979	27,054
Richland	17,553	7,031	10,231	12,109	9,026	4,599	6,871	14,157

COMPARATIVE TABLE SHOWING PRODUCTION OF RYE IN OHIO FOR EIGHT YEARS.— Concluded.

Counties.	Number of Bushels.							
	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Ross	11,730	6,695	4,341	4,779	1,170	679	1,721	2,434
Sandusky	10,074	8,805	12,086	13,098	10,527	3,672	12,046	8,755
Scioto	792	652	941	1,371	36	621	34	252
Seneca	3,928	1,061	4,796	3,430	5,072	2,155	7,658	4,544
Shelby	5,736	5,727	10,254	10,727	3,530	3,662	10,728	5,003
Stark	12,751	3,944	4,144	4,671	1,997	1,021	1,261	1,386
Summit	7,346	4,571	3,178	4,958	1,923	499	437	2,446
Trumbull	10,370	3,018	5,255	4,532	1,756	1,016	934	2,384
Tuscarawas	11,958	5,005	5,130	3,967	1,975	1,817	4,361	3,367
Union	4,853	1,470	1,261	3,768	3,709	4,120	13,764	6,014
Van Wert	7,663	20,510	23,152	38,055	24,522	42,211	135,708	42,863
Vinton	820	1,319	676	149	137	90	102	178
Warren	11,877	1,665	4,295	3,423	325	2,681	4,389	4,178
Washington	5,406	13,763	5,252	3,126	1,551	2,091	1,431	1,451
Wayne	9,793	1,785	3,688	5,119	1,400	348	1,594	1,320
Williams	7,219	9,376	14,838	7,926	4,339	3,435	8,645	3,128
Wood	11,070	15,124	24,651	25,389	35,184	24,176	41,244	36,038
Wyandot	4,942	2,545	3,970	5,207	3,329	2,900	12,130	5,533
Total product.	855,120	617,544	671,807	710,303	508,905	446,696	1,049,740	618,238
Total area	65,684	99,639	72,429	48,223	43,244	55,907	67,062	56,350

Average area for 8 years 508,538 acres.
Average product for 8 years 684,794 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF OATS IN OHIO FOR EIGHT YEARS.

Counties.	Number of Bushels.							
	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Adams	43,329	77,689	38,975	38,209	43,365	25,051	15,832	14,967
Allen	349,308	401,856	311,852	382,106	273,388	294,659	322,305	252,529
Ashland ...	609,853	571,221	544,881	598,441	462,819	481,381	550,468	342,944
Ashtabula .	618,906	870,931	968,118	658,968	432,824	420,912	725,428	344,847
Athens	32,725	58,611	31,493	42,979	31,567	19,717	13,664	9,542
Auglaize ...	436,821	509,627	413,973	404,383	305,686	332,991	317,358	280,252
Belmont ..	183,874	228,195	144,951	228,454	246,583	192,985	196,175	162,325
Brown	107,478	117,588	118,490	130,405	114,575	85,210	64,915	48,198
Butler	234,489	584,500	399,513	293,559	243,972	193,296	191,794	159,252
Carroll	375,584	403,262	357,465	370,675	344,890	417,431	409,869	253,599
Champaign .	278,744	389,235	303,857	258,400	162,719	146,161	238,534	173,335
Clark	190,345	224,295	212,029	198,085	154,270	126,973	145,715	120,447
Clermont ..	117,593	157,480	190,139	183,642	146,753	125,192	109,825	78,617
Clinton	99,373	183,517	100,621	128,794	88,852	73,638	79,638	83,610
Columbiana	603,300	651,654	639,332	599,833	521,166	538,715	649,130	357,108
Coshocton .	192,631	285,635	231,328	270,444	294,642	243,475	266,338	179,107
Crawford ..	703,046	769,408	1,002,133	752,136	626,156	633,115	540,802	379,672
Cuyahoga .	459,889	560,811	633,754	566,499	361,944	344,343	438,768	354,227
Darke	628,447	690,847	607,100	608,590	513,673	477,628	550,255	449,974
Defiance ..	468,003	417,897	543,670	558,774	378,601	274,653	354,480	367,659
Delaware ..	320,801	522,712	377,566	283,946	219,903	221,317	241,698	175,946
Erie	463,806	418,318	451,054	427,375	391,240	288,254	349,309	237,447
Fairfield ..	78,083	227,403	104,263	124,496	91,768	80,010	87,417	72,873
Fayette	46,186	156,590	45,668	52,841	36,946	32,672	29,459	30,811
Franklin ...	306,703	462,816	217,992	207,111	155,916	151,719	131,999	154,284
Fulton	563,658	632,212	804,581	627,960	563,084	397,125	624,583	523,955
Gallia	51,727	41,292	23,279	40,669	47,151	28,653	21,052	8,646
Geauga	423,622	526,633	446,775	439,415	283,941	223,607	370,003	274,419
Greene	139,219	282,940	193,468	173,284	130,808	100,017	100,379	115,335
Guernsey ..	137,928	174,673	116,344	182,915	192,955	180,529	181,625	127,572
Hamilton ..	79,636	194,096	147,535	105,828	94,023	77,060	55,582	51,097
Hancock ..	352,392	445,754	493,191	472,052	307,126	329,261	345,803	275,195
Hardin	329,230	492,936	417,137	370,528	262,035	338,669	274,546	203,866
Harrison ..	170,958	195,070	135,440	194,500	172,709	178,715	173,983	128,987
Henry	352,776	403,213	417,420	356,011	279,991	150,376	232,612	218,185
Highland ..	36,029	86,294	43,017	58,899	50,353	30,395	29,032	36,798
Hocking ...	24,507	58,315	23,915	35,029	31,171	20,921	17,849	18,492
Holmes	464,954	510,123	507,230	515,572	438,114	441,271	601,449	336,241
Huron	818,368	875,667	989,998	992,621	683,970	630,327	780,033	455,023
Jackson ...	20,342	40,613	20,717	33,196	22,731	19,644	14,860	9,128
Jefferson ..	300,346	307,222	223,884	293,466	311,718	284,758	288,317	189,287
Knox	331,494	379,608	337,956	351,141	320,495	341,670	372,531	270,480
Lake	282,175	239,411	294,598	267,447	232,121	165,651	208,511	208,879
Lawrence .	50,858	43,048	38,070	42,880	53,966	38,194	18,935	6,154
Licking	348,096	673,217	303,111	294,847	231,528	289,005	281,005	179,380
Logan	288,160	401,431	188,975	331,508	170,032	204,455	198,499	129,810
Lorain	675,658	903,089	813,945	721,001	469,554	426,796	478,748	348,046
Lucas	405,204	393,298	447,597	393,938	293,292	211,677	275,509	254,671
Madison ...	202,909	214,235	166,287	127,429	94,091	81,493	107,070	72,120
Mahoning ..	542,087	292,377	565,506	488,695	460,094	344,680	510,911	352,784
Marion	404,892	636,250	528,323	511,523	361,590	415,313	405,846	227,746
Medina	777,848	760,348	715,886	742,772	441,735	525,046	723,861	460,803
Meigs	54,595	69,601	30,043	52,232	47,656	33,512	25,968	18,893
Mercer	605,476	703,071	664,059	651,413	480,016	497,915	535,724	413,044
Miami	522,361	553,379	468,301	415,013	408,432	386,272	438,245	367,209
Monroe	122,154	141,484	84,837	145,595	135,190	119,043	112,078	78,969
Montgomery	345,303	463,801	409,472	357,536	320,096	256,308	268,675	345,452
Morgan	44,898	77,174	75,885	79,523	74,088	39,093	26,892	29,876
Morrow ...	440,993	540,871	484,332	497,614	362,417	381,453	406,232	292,334
Muskingum	117,933	202,956	133,479	191,596	183,778	164,990	132,114	112,184
Noble	74,511	101,641	79,965	102,586	80,838	66,464	61,509	49,168
Ottawa	287,828	310,856	369,847	285,422	172,195	138,039	131,408	121,624
Paulding ..	290,712	263,481	330,957	233,769	170,769	100,358	138,070	126,767
Perry	34,665	68,025	45,220	52,193	33,162	40,667	29,241	22,204
Pickaway ..	38,522	155,121	41,041	42,739	32,074	17,538	24,010	26,997
Pike	32,709	47,597	21,904	38,182	24,210	21,254	19,257	21,851
Portage	702,875	810,075	628,989	616,094	431,411	422,926	673,013	345,773
Preble	318,380	369,609	407,764	370,625	384,498	276,081	265,662	327,825
Putnam	218,534	218,941	282,320	277,034	132,630	101,288	135,680	147,407
Richland ..	787,202	759,198	878,506	855,471	665,400	684,374	711,435	488,585

COMPARATIVE TABLE SHOWING PRODUCTION OF OATS IN OHIO FOR EIGHT YEARS—Concluded.

Counties.	Number of Bushels.							
	1897.	1896.	1895.	1894.	1893.	1892.	1891	1890.
Ross	24,821	121,517	41,976	74,183	48,081	32,581	22,985	29,441
Sandusky ..	568,987	580,198	694,488	585,184	397,177	340,089	479,185	319,068
Scioto	65,546	98,342	59,984	85,268	66,625	53,837	29,157	20,399
Seneca	592,493	778,999	714,182	730,228	550,909	471,451	636,648	434,265
Shelby	565,007	621,071	589,958	586,274	407,075	444,379	451,596	355,286
Stark	1,100,271	1,137,122	1,263,340	966,968	779,889	798,071	1,079,115	584,057
Summit ...	701,253	759,733	722,404	636,985	450,800	465,986	682,082	374,548
Trumbull ..	754,977	940,600	930,538	573,461	423,809	304,225	571,885	296,816
Tuscarawas.	462,495	554,621	541,737	542,650	452,546	457,170	536,353	322,077
Union	331,050	503,789	254,670	272,063	161,122	210,055	193,346	125,258
Van Wert ..	429,662	334,965	517,944	718,065	298,318	234,657	345,182	281,958
Vinton	22,548	40,745	23,460	32,483	25,558	14,400	13,392	13,462
Warren	190,654	399,821	203,010	208,620	196,923	160,380	177,594	161,588
Washington.	154,905	208,637	110,668	180,966	156,040	124,844	99,810	75,939
Wayne	1,029,760	1,030,683	1,015,500	950,125	696,523	683,414	912,220	515,554
Williams ..	664,182	578,117	727,717	715,623	640,301	436,223	584,845	552,790
Wood	1,039,803	825,611	1,324,520	1,054,242	727,387	514,925	635,603	471,724
Wyandot ...	300,578	510,549	446,320	387,570	275,341	350,605	215,415	211,933
Total prod.	30,563,033	36,027,464	34,013,739	31,991,896	24,537,989	22,541,473	26,515,935	19,049,033
Total area	1,052,605	1,262,906	1,095,142	1,051,773	856,235	827,823	879,463	959,012

Average area for 8 years 998,120 acres.
Average product for 8 years 28,158,071 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF CORN IN OHIO FOR EIGHT YEARS.

Counties.	Bushels (Shelled.)							
	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Adams	937,766	1,156,639	646,711	850,644	641,597	748,599	855,706	653,047
Allen	1,357,388	1,538,141	1,314,789	1,246,444	970,477	924,822	1,255,294	643,051
Ashland ...	831,350	968,200	911,977	463,112	465,285	615,807	714,046	504,377
Ashtabula ..	448,283	558,988	618,204	711,620	130,104	255,769	459,455	150,364
Athens	477,430	515,263	498,507	421,385	420,829	450,869	494,990	327,559
Auglaize ..	1,403,978	2,012,775	1,347,947	1,259,745	1,049,422	1,132,936	1,132,127	762,424
Belmont	844,974	1,123,655	824,700	521,784	849,848	926,548	918,058	675,537
Brown	1,616,065	1,413,209	1,020,024	955,391	890,880	994,605	1,128,758	886,248
Butler	1,942,276	2,855,940	1,572,733	1,366,373	400,763	545,177	1,824,244	1,149,168
Carroll	439,523	612,753	496,521	271,203	393,892	537,927	504,397	366,535
Champaign .	1,858,336	2,748,826	1,720,523	1,968,895	1,741,750	2,012,820	2,012,054	1,086,593
Clark	2,026,852	2,419,539	1,621,740	1,703,073	1,691,658	1,729,942	1,581,541	906,394
Clermont ..	1,000,661	1,094,808	1,189,538	636,340	645,313	818,251	817,396	683,662
Clinton	2,280,104	2,902,243	2,270,012	2,092,341	1,494,252	1,888,142	1,806,124	1,231,092
Columbiana	536,015	797,793	805,417	427,170	553,034	543,245	590,081	453,853
Coshocton ..	790,637	1,026,726	1,047,137	614,108	754,924	827,100	944,749	711,436
Crawford ..	1,106,100	1,375,642	1,514,750	1,083,403	887,158	951,041	961,586	823,721
Cuyahoga ..	329,851	322,106	402,182	277,535	243,684	212,815	294,156	203,921
Darke	3,102,697	4,238,209	2,609,091	2,312,433	1,951,414	2,065,136	2,473,589	1,381,943
Defiance ...	916,558	1,235,429	817,674	801,304	710,529	322,276	940,444	550,732
Delaware ..	1,449,185	1,757,653	1,056,614	1,243,620	957,356	1,033,741	1,202,275	875,021
Erie	572,969	708,363	566,006	684,943	452,103	396,409	450,166	362,784
Fairfield	1,688,568	2,241,576	1,679,819	1,885,645	1,822,385	1,980,382	1,723,339	1,342,478
Fayette	2,570,879	2,937,730	1,819,871	1,954,960	1,929,405	2,618,643	2,143,115	1,296,405
Franklin ..	2,523,647	3,254,039	2,280,794	2,261,157	2,045,502	2,483,590	2,183,216	1,899,245
Fulton	920,257	1,230,188	946,941	770,799	833,472	376,459	962,272	827,272
Gallia	616,806	681,697	519,875	470,702	501,052	514,195	578,475	452,914
Geauga	330,419	357,722	319,214	252,811	194,690	178,311	243,217	180,745
Greene	2,330,046	3,535,217	2,173,452	2,155,070	797,278	2,035,903	2,029,663	1,178,224
Guernsey ..	600,491	780,770	635,910	521,725	567,740	586,087	631,910	387,047
Hamilton ..	725,646	868,988	553,061	348,343	525,954	578,097	689,164	418,427
Hancock ...	1,736,131	2,288,577	2,270,751	1,712,219	1,461,092	1,217,807	1,697,182	1,057,080
Hardin	1,368,508	2,055,035	1,274,403	1,237,701	828,292	1,037,153	1,038,381	562,999
Harrison ...	467,615	626,528	563,971	327,067	422,243	592,066	563,236	434,506
Henry	2,038,971	2,398,694	1,964,750	1,809,368	1,423,826	660,206	1,376,851	992,352
Highland ..	1,691,519	2,132,133	1,427,075	1,325,736	127,895	1,248,069	1,522,613	1,142,284
Hocking ...	445,936	520,207	417,142	421,497	362,892	378,994	375,072	296,447
Holmes	705,329	852,011	695,059	437,789	482,660	686,827	782,664	605,713
Huron	894,766	1,080,982	1,061,286	706,037	644,419	645,104	627,870	519,375
Jackson ...	347,166	432,923	278,399	349,220	211,874	293,387	268,227	246,865
Jefferson ..	475,869	649,499	535,160	258,869	414,223	563,266	564,536	434,925
Knox	1,034,932	1,420,425	1,108,078	718,143	823,830	1,035,182	1,109,050	949,307
Lake	250,227	227,714	285,149	178,749	144,311	156,415	147,158	106,278
Lawrence .	444,250	426,023	370,443	355,724	359,335	405,445	408,031	288.534
Licking	1,619,161	601,094	1,651,757	1,536,529	1,619,845	1,581,223	1,713,804	1,282,109
Logan	1,606,952	2,030,260	1,237,751	1,476,866	936,449	1,310,559	1,290,190	659,690
Lorain	568,355	686,801	651,693	494,658	382,416	374,866	386,789	311,459
Lucas	696,837	880,480	699,385	582,761	543,112	255,074	627,179	590,216
Madison ...	2,922,451	3,916,307	2,812,326	3,368,050	2,745,469	2,494,673	2,570,687	1,828,430
Mahoning ..	426,137	2,434,464	476,950	388,234	398,668	358,981	411,411	324,357
Marion	1,451,218	2,080,057	1,834,453	1,666,897	1,222,733	1,422,538	1,345,615	749,835
Medina	677,588	817,701	687,115	471,318	451,808	522,823	649,209	394,262
Meigs	425,885	509,077	441,688	330,353	385,341	426,818	433,336	352,679
Mercer	1,416,796	1,989,803	1,533,879	1,472,242	964,663	1,054,498	1,501,346	630,873
Miami	1,907,044	2,705,212	1,440,979	1,502,462	1,594,468	1,881,041	1,748,568	939,636
Monroe	537,453	596,458	517,222	282,026	368,498	532,315	570,367	305,981
Montgomery	1,658,414	2,642,318	1,442,263	1,547,585	1,151,464	1,161,650	1,888,576	739,615
Morgan	578,362	622,452	592,137	400,671	574,347	512,405	571,745	359,137
Morrow	856,196	1,007,102	1,004,100	784,083	650,708	691,654	765,971	590,605
Muskingum	945,860	1,268,634	1,091,455	296,294	953,001	1,088,306	985,246	693,128
Noble	613,915	688,186	620,916	394,762	514,809	557,943	667,750	398,164
Ottawa	813,510	921,456	853,920	477,662	375,293	403,414	477,401	489,444
Paulding ..	1,110,984	1,581,195	1,473,627	874,654	861,361	546,449	966,905	633,466
Perry	623,430	1,246,476	587,840	484,232	480,328	589,789	516,447	402,357
Pickaway ..	2,615,699	4,020,015	2,641,930	2,793,610	2,817,572	2,847,562	2,166,418	2,423,683
Pike	737,540	1,030,174	590,062	932,635	476,750	690,179	639,080	548,645
Portage	448,948	637,373	563,746	417,983	417,922	360,334	471,898	395,019
Preble	1,884,200	2,616,078	1,673,061	1,712,613	1,212,531	1,587,571	1,179,052	777,258
Putnam ...	2,433,846	2,398,700	2,482,136	2,003,212	1,736,568	1,130,431	1,707,238	1,297,461
Richland ...	977,172	1,089,980	1,092,156	651,701	594,399	807,572	838,381	612,932
Ross	2,218,451	3,160,790	2,034,469	2,497,783	1,866,638	1,779,386	2,307,884	2,031,784

COMPARATIVE TABLE SHOWING PRODUCTION OF CORN IN OHIO FOR EIGHT YEARS—Concluded.

Counties.	Bushels (Shelled.)							
	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Sandusky ..	1,497,865	1,496,354	1,562,198	1,273,177	984,078	826,975	1,337,646	832,637
Scioto	715,199	644,455	716,036	838,800	529,879	710,322	621,052	625,972
Seneca	1,420,813	1,891,697	1,806,580	1,472,872	1,136,157	975,924	1,400,739	925,103
Shelby	1,332,986	2,206,410	1,288,781	1,542,529	915,715	1,255,037	1,475,850	700,392
Stark	1,125,604	1,434,023	1,425,923	724,204	766,205	948,792	1,075,221	793,239
Summit ...	614,926	791,030	728,837	453,925	466,096	463,667	605,824	429,063
Trumbull ..	416,520	640,269	603,299	432,568	358,074	271,838	365,887	289,534
Tuscarawas.	684,775	864,204	891,503	506,476	583,792	693,476	727,276	531,420
Union	1,503,679	2,260,187	1,438,152	1,437,624	1,070,589	1,323,909	1,307,792	583,542
Van Wert .	1,861,126	2,046,000	2,005,548	1,850,425	1,319,471	1,025,489	1,883,800	1,196,464
Vinton	300,466	364,855	315,840	309,097	230,309	283,769	258,910	224,641
Warren	1,745,400	3,749,484	1,544,712	1,085,442	1,382,692	1,492,633	1,642,697	786,694
Washington	759,702	701,817	661,374	412,611	588,376	692,008	775,404	46,569
Wayne	1,346,455	1,533,031	1,458,537	885,484	716,322	926,272	1,129,765	801,805
Williams ..	776,751	1,045,812	745,642	745,306	663,513	405,836	879,295	730,952
Wood	2,503,655	2,861,704	2,871,727	2,313,169	2,133,908	1,515,235	2,075,381	1,607,937
Wyandot ..	1,113,728	1,564,721	1,538,340	1,211,825	866,567	900,253	829,142	775,137
Total prod.	103,004,970	134,796,274	102,447,445	88,805,607	77,229,446	81,892,100	93,832,652	63,694,215
Total area	2,999,826	3,230,331	3,037,014	2,910,206	2,655,050	2,458,380	2,634,436	2,593,203

Average area for 8 years 2,814,806 acres.
Average product for 8 years 93,212,839 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF MEADOWS IN OHIO FOR EIGHT YEARS.

Counties.	Tons of Hay.							
	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Adams	9,486	9,155	9,343	11,889	11,277	13,694	15,003	14,836
Allen	21,497	22,519	11,830	27,339	23,629	26,736	27,980	26,048
Ashland	21,597	27,655	17,352	36,651	25,032	37,454	44,226	43,657
Ashtabula	50,451	47,646	39,327	63,848	72,294	67,175	77,889	69,253
Athens	17,941	13,149	7,010	21,760	23,818	28,753	33,387	35,518
Auglaize	16,442	16,117	9,803	19,146	17,497	17,455	18,348	20,111
Belmont	28,876	27,803	14,597	29,822	32,370	40,800	52,359	54,727
Brown	13,450	12,411	12,652	16,937	14,772	17,249	20,401	19,591
Butler	14,096	11,287	21,107	17,785	17,334	20,859	22,120	24,770
Carroll	22,602	23,305	12,547	31,634	30,077	39,842	41,259	41,241
Champaign	15,566	15,304	7,452	16,963	14,430	16,601	21,074	16,663
Clark	18,210	16,840	12,345	21,613	22,367	23,265	24,463	25,665
Clermont	14,145	11,332	18,107	25,330	3,588	29,138	23,701	25,774
Clinton	11,792	12,407	10,590	28,236	20,441	22,291	23,796	23,604
Columbiana	38,475	39,786	15,632	44,913	44,556	53,896	60,673	61,770
Coshocton	26,182	26,557	13,152	24,860	31,004	42,430	44,332	48,759
Crawford	31,545	30,891	20,732	35,508	28,142	36,470	35,382	33,454
Cuyahoga	34,363	31,979	23,149	40,123	43,134	48,285	56,863	62,454
Darke	19,420	17,323	9,264	16,464	14,215	15,801	21,049	23,385
Defiance	18,613	21,487	13,667	21,646	22,066	19,034	18,057	17,067
Delaware	35,558	33,590	33,422	55,716	51,316	53,745	88,378	51,238
Erie	11,532	12,919	9,634	15,482	15,196	17,097	18,589	20,258
Fairfield	17,466	24,092	16,008	30,837	29,298	32,648	31,866	33,524
Fayette	14,149	8,442	4,103	14,099	19,690	14,474	14,554	15,494
Franklin	30,987	29,686	20,002	41,234	42,160	46,741	45,110	34,963
Fulton	16,721	25,979	12,892	24,259	22,840	21,352	15,805	15,232
Gallia	13,312	8,985	7,516	12,224	13,304	15,380	16,888	18,965
Geauga	24,807	26,852	12,765	40,109	40,124	38,293	42,708	41,530
Greene	17,542	33,708	13,926	24,489	21,298	22,609	23,269	20,997
Guernsey	28,969	25,704	14,347	29,494	36,329	41,885	47,970	52,234
Hamilton	14,468	11,040	14,017	14,627	18,695	21,140	20,111	23,208
Hancock	29,540	36,044	25,047	41,533	35,119	34,506	29,471	27,802
Hardin	24,937	32,690	12,469	33,450	28,890	26,827	29,563	84,488
Harrison	28,295	26,225	12,945	33,287	33,614	38,316	44,529	50,669
Henry	12,077	17,182	10,577	16,854	15,174	15,676	12,868	11,505
Highland	15,542	14,799	14,278	26,964	19,073	21,794	25,212	31,073
Hocking	8,473	10,131	6,444	13,140	13,808	14,923	17,378	17,458
Holmes	20,827	19,911	14,668	27,686	24,619	28,525	31,364	37,457
Huron	33,353	30,932	26,574	51,278	40,131	45,416	45,577	52,573
Jackson	13,140	8,625	6,193	13,388	12,165	14,723	16,582	18,843
Jefferson	26,124	25,330	10,853	26,052	27,144	35,871	39,777	38,805
Knox	25,559	27,973	13,787	35,102	33,025	42,669	40,566	47,302
Lake	15,412	15,900	8,524	15,870	14,938	17,500	19,630	21,826
Lawrence	5,113	3,834	4,081	4,083	5,167	6,087	6,478	7,332
Licking	53,755	51,919	27,474	51,805	53,875	67,862	71,282	74,176
Logan	18,952	22,037	10,313	29,819	27,644	24,519	28,673	26,324
Lorain	37,790	36,527	33,482	79,180	53,727	61,826	65,705	69,368
Lucas	13,968	14,437	8,552	17,203	14,469	14,396	13,963	14,434
Madison	16,809	12,669	8,316	23,445	23,423	22,117	24,775	21,455
Mahoning	20,601	26,355	14,264	42,063	53,205	51,643	56,434	61,790
Marion	21,276	28,216	12,580	35,229	31,648	31,224	30,878	26,911
Medina	25,434	30,007	18,969	46,721	35,920	41,774	46,185	41,399
Meigs	14,717	10,720	5,338	16,837	18,894	21,411	22,414	25,723
Mercer	20,251	19,078	11,430	29,223	17,430	19,238	22,829	22,023
Miami	11,442	12,652	6,981	11,667	11,284	13,995	14,519	16,829
Monroe	18,950	12,724	9,201	22,438	23,136	26,498	34,596	35,647
Montgomery	15,132	13,257	12,625	18,141	16,307	22,261	20,436	23,302
Morgan	19,905	19,633	12,322	22,526	27,350	30,917	36,056	36,906
Morrow	31,227	29,591	18,626	49,217	39,499	42,587	48,822	46,792
Muskingum	32,823	35,747	18,242	35,262	43,958	51,499	54,468	62,286
Noble	23,465	16,370	12,326	23,149	25,861	29,592	38,673	37,997
Ottawa	11,232	11,107	10,006	16,026	16,884	17,018	19,083	14,274
Paulding	12,360½	12,104	7,345	16,141	16,542	14,377	14,025	13,594
Perry	17,460	18,788	12,289	22,870	21,396	27,248	29,517	33,131
Pickaway	10,807	15,033	8,702	12,192	12,663	13,777	16,472	15,636
Pike	3,615	3,378	4,417	7,796	5,705	7,678	16,012	10,577
Portage	21,124	21,999	11,275	38,177	43,880	49,816	50,243	50,112
Preble	10,509	7,482	8,347	10,699	11,592	13,032	14,067	12,801
Putnam	18,105	20,193	12,648	37,761	21,180	24,756	20,384	17,383
Richland	27,010	27,976	19,070	43,400	28,193	37,125	41,283	46,319
Ross	11,204	9,288	5,318	14,013	10,904	13,620	16,174	20,343

COMPARATIVE TABLE SHOWING PRODUCTION OF MEADOWS IN OHIO FOR EIGHT YEARS—Concluded.

Counties.	Tons of Hay.							
	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Sandusky	20,585	23,475	18,422	23,868	15,365	19,421	16,858	13,741
Scioto	9,310	8,592	6,872	11,272	15,443	12,054	12,838	14,295
Seneca	23,836	24,938	21,752	41,128	25,712	33,183	30,645	29,010
Shelby	11,252	15,116	7,692	16,178	13,039	13,813	17,009	16,448
Stark	45,563	50,630	25,341	60,165	45,824	61,989	68,647	62,266
Summit	26,815	24,144	10,848	32,613	28,245	35,491	37,777	43,745
Trumbull	43,870	35,496	24,715	62,081	71,980	75,017	80,071	86,663
Tuscarawas	35,951	37,129	23,590	44,626	43,014	55,935	56,790	64,969
Union	25,456	19,104	13,181	42,487	38,451	32,362	38,254	31,820
Van Wert	25,956	25,155	10,582	30,495	23,842	22,337	23,016	22,938
Vinton	11,513	7,686	4,478	12,081	13,966	14,113	14,593	14,594
Warren	14,488	12,927	17,248	23,123	20,357	24,985	24,554	23,002
Washington	24,427	23,722	14,971	29,485	31,917	40,234	43,539	47,753
Wayne	32,591	37,849	16,858	56,252	42,143	47,473	51,617	57,517
Williams	28,586	34,187	21,769	27,981	22,325	24,590	22,495	20,606
Wood	28,847	30,465	18,758	33,647	30,514	29,403	23,231	26,314
Wyandot	26,371½	29,925	14,080	30,041	23,028	26,465	25,985	26,981
Total product	1,903,963	1,925,389	1,236,315	2,544,248	2,336,794	2,650,066	2,862,482	2,893,284
Total area	1,661,038	1,941,274	2,037,931	2,239,212	2,002,716	2,159,005	2,163,000	2,087,370

Average area for 8 years 2,036,443 acres.
Average product for 8 years 2,294,068 tons.

COMPARATIVE TABLE SHOWING PRODUCTION OF CLOVER IN OHIO FOR EIGHT YEARS.

Counties.	Tons of Hay.							
	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Adams	7,425	1,160	1,438	1,585	3,906	1,023	1,714	1,757
Allen	18,057	350	1,773	9,879	25,372	5,746	8,087	11,835
Ashland	32,459	9,795	6,002	10,488	21,891	13,665	11,677	10,423
Ashtabula	6,780	4,041	1,314	879	1,004	778	1,223	1,491
Athens	2,450	400	296	950	1,146	291	268	521
Auglaize	15,585	1,967	1,512	9,501	12,148	6,622	8,236	9,223
Belmont	12,919	2,073	694	1,958	3,145	513	767	1,773
Brown	2,351	653	719	792	2,552	1,151	1,258	1,869
Butler	17,278	2,057	5,629	9,104	13,796	7,373	9,950	5,497
Carroll	8,457	826	509	1,642	6,804	2,478	1,965	2,335
Champaign	24,238	1,813	5,068	14,494	16,252	13,892	13,720	13,795
Clark	21,675	2,337	5,622	10,297	16,467	11,346	15,167	13,194
Clermont	4,333	905	2,022	1,536	1,304	1,804	2,140	1,571
Clinton	18,334	3,251	4,109	3,307	5,118	2,841	4,013	2,295
Columbiana	14,857	3,337	3,326	8,534	11,829	3,253	2,409	3,321
Coshocton	10,478	2,[illegible]27	809	1,773	5,071	2,152	3,725	3,706
Crawford	22,271	5,346	7,100	9,281	18,711	2,494	4,810	17,382
Cuyahoga	4,419	2,626	2,341	1,524	2,298	1,091	934	866
Darke	30,699	1,194	4,426	20,442	25,439	15,539	18,835	14,083
Defiance	23,093	1,333	6,472	6,980	12,706	5,806	8,227	10,723
Delaware	21,587	3,003	3,683	9,217	11,055	5,461	5,507	6,823
Erie	10,397	2,046	3,867	2,173	5,451	5,555	5,206	5,032
Fairfield	22,390	4,205	7,183	13,520	11,613	5,288	5,234	5,569
Fayette	10,305	894	2,722	3,658	2,073	1,910	1,511	1,117
Franklin	19,196	3,211	5,756	5,808	8,090	6,291	7,283	10,135
Fulton	18,917	2,681	7,182	7,630	13,176	11,378	15,389	20,344
Gallia	2,892	952	514	821	1,552	516	951	1,034
Geauga	9,155	2,735	645	1,143	2,255	1,188	1,207	2,747
Greene	18,796	1,995	6,621	9,212	11,256	6,126	8,845	3,890
Guernsey	5,024	672	342	645	1,537	353	590	579
Hamilton	5,088	1,048	3,161	4,087	6,256	5,644	9,604	3,621
Hancock	32,576	1,923	3,211	12,233	23,238	7,903	14,925	19,595
Hardin	21,494	334	1,291	6,745	14,264	5,060	5,682	8,019
Harrison	5,878	1,219	315	573	2,098	470	219	498
Henry	17,744	1,935	6,326	3,201	9,931	7,877	10,443	13,345
Highland	13,825	883	1,811	3,022	5,361	2,023	3,361	1,700
Hocking	3,720	895	671	1,079	1,209	361	876	406
Holmes	15,490	12,084	3,946	4,369	13,275	9,670	9,239	8,016
Huron	26,941	7,175	7,878	4,769	11,912	8,156	9,682	13,579
Jackson	1,053	141	136	134	98	17	68	120
Jefferson	9,917	3,036	823	1,935	4,664	1,773	1,396	2,780
Knox	20,210	7,242	3,775	9,511	16,144	8,570	11,454	10,568
Lake	1,731	984	353	474	1,972	587	556	646
Lawrence	1,082	507	339	252	940	595	804	876
Licking	15,314	4,802	6,576	10,436	9,794	2,610	5,095	4,714
Logan	26,675	498	9,667	13,049	13,772	11,142	8,814	10,753
Lorain	14,396	4,689	4,343	2,753	5,294	3,425	2,352	2,198
Lucas	10,200	2,081	3,554	4,381	6,811	5,313	6,369	7,046
Madison	15,220	2,618	4.065	4,186	6,939	4,788	6,598	4,379
Mahoning	19,323	3,153	2,292	5,960	9,346	5,366	2,792	3,032
Marion	20,352	3,614	4,214	6,861	15,088	7,664	8,905	8,629
Medina	23,509	5,316	6,218	9,661	15,602	7,928	5,861	9,066
Meigs	3,555	595	363	1,765	2,314	616	654	1,022
Mercer	14,941	757	960	10,081	16,020	9,369	8,910	13,351
Miami	18,894	941	1,665	10,012	15,212	9,841	753	11,178
Monroe	6,285	279	64	459	472	93	285	558
Montgomery	22,432	2,041	4,194	9,959	20,678	12,418	19,582	10,495
Morgan	8,828	855	776	2,435	2,165	818	1,188	1,855
Morrow	21,713	8,205	8,343	7,746	9,950	5,414	3,716	4,990
Muskingum	9,283	2,617	1,050	2,590	2,120	786	1,832	1,096
Noble	5,352	285	384	1,099	1,314	341	365	355
Ottawa	13,286	2,186	3,017	527	4,501	4,572	3,380	6,592
Paulding	7,463	486	1,347	2,403	5,675	2,767	5,251	4,173
Perry	8,035	1,005	508	1,237	1,651	438	1,332	806
Pickaway	18,997	2,595	5,294	8,505	7,935	4,671	4,806	3,241
Pike	3,677	943	1,444	1,755	1,510	624	686	808
Portage	18,869	5,384	2,104	8,029	20,968	6,561	5,874	7,736
Preble	22,081	2,318	4,144	9,610	14,329	7,925	11,064	7,249
Putnam	19,852	955	2,654	7,412	12,096	6,912	10,226	12,805
Richland	34,156	12,199	9,499	10,140	20,488	6,306	7,209	12,367
Ross	11,076	2,135	3.558	5,932	5,273	1,832	3,306	2,382

COMPARATIVE TABLE SHOWING PRODUCTION OF CLOVER IN OHIO FOR EIGHT YEARS — Concluded.

Counties.	Tons of Hay.							
	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Sandusky	21,271	6,562	7,517	7,973	16,285	16,061	17,536	21,014
Scioto	3,389	1,162	1,315	1,274	1,865	809	717	937
Seneca	38,937	3,438	7,473	11,799	28,525	15,091	18,566	29,881
Shelby	18,195	336	1,854	9,934	12,076	9,371	10,928	12,667
Stark	23,112	10,351	7,816	10,073	27,494	13,022	7,217	11,565
Summit	17,263	5,198	2,966	8,081	14,549	8,864	12,371	7,521
Trumbull	14,471	5,607	2,455	2,711	4,656	20,478	2,218	1,831
Tuscarawas	10,735	3,262	2,364	2,055	8,431	2,359	2,290	8,857
Union	19,541	1,763	3,115	6,205	11,794	5,995	7,772	7,339
Van Wert	13,215	585	860	6,865	13,309	4,886	7,367	8,427
Vinton	1,915	258	301	542	548	192	353	287
Warren	16,740	1,928	5,435	6,754	10,532	3,367	6,387	12,364
Washington	10,806	755	787	2,034	3,038	883	2,265	3,520
Wayne	41,009	17,941	11,188	12,758	33,169	22,936	14,446	16,035
Williams	21,358	3,588	7,463	8,151	16,445	10,057	13,694	17,472
Wood	19,424	3,277	6,289	5,562	12,657	10,878	14,375	13,833
Wyandot	17,888	2,185	4,150	8,679	16,249	5,505	6,583	11,987
Total product	1,336,599	252,507	299,377	506,589	865,333	487,513	544,546	602,152

Average product for 8 years 611,827 tons.

COMPARATIVE TABLE SHOWING PRODUCTION OF CLOVER SEED IN OHIO FOR EIGHT YEARS.

Counties.	Bushels of Seed.							
	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Adams	10,004	1,585	1,729	1,020	3,498	446	1,100	177
Allen	18,999	361	629	6,320	14,135	2,464	1,843	3,202
Ashland	17,618¾	3,726	6,137	3,812	5,086	1,107	4,862	4,545
Ashtabula	2,268	285	60	11	117	3	29	9
Athens	191	35	31	93	201	22	66	16
Auglaize	13,702	255	1,143	3,264	8,913	3,310	743	1,662
Belmont	8,125	422	133	127	1,337	14	10	25
Brown	2,798	270	639	675	408	47	127	11
Butler	12,466	1,751	4,518	4,884	5,225	894	4,899	664
Carroll	6,038	624	643	275	2,501	418	375	197
Champaign	20,524	229	4,291	8,895	18,149	1,561	1,845	5,660
Clark	13,109	514	7,153	7,742	17,651	3,497	5,280	4,804
Clermont	1,578	179	578	95	....	8	139	327
Clinton	11,976	2,487	10,293	3,405	2,790	1,241	2,158	425
Columbiana	6,541	328	1,638	562	1,333	88	255	169
Coshocton	10,758	1,540	1,178	800	2,048	149	1,626	1,021
Crawford	20,605	3,459	15,820	7,304	7,673	1,828	1,389	7,489
Cuyahoga	1,344	58	60	11	15	2	....	5
Darke	27,478	700	5,236	7,938	14,462	7,143	5,616	4,484
Defiance	18,253	2,317	13,903	14,694	15,475	4,412	4,990	7,112
Delaware	8,133	678	3,200	5,620	4,886	311	1,259	1,264
Erie	9,414	1,488	3,227	1,069	2,024	782	1,188	1,864
Fairfield	19,902	1,289	12,844	20,573	20,040	3,826	3,093	1,791
Fayette	11,947	638	4,603	2,108	1,657	813	622	290
Franklin	16,952	602	8,078	6,003	8,713	1,947	2,729	6,534
Fulton	17,549	3,236	5,314	5,521	10,481	3,882	4,431	9,605
Gallia	817	372	84	145	278	51	247	7
Geauga	1,749	242	6	68	11	22	9	86
Greene	15,318	821	10,684	5,613	9,516	2,870	4,870	1,282
Guernsey	3,182	242	43	123	493	8	49	39
Hamilton	2,154	194	1,398	843	985	231	555	138
Hancock	27,923	2,526	2,986	14,890	15,729	3,255	3,367	9,147
Hardin	14,793	214	608	7,985	11,266	1,571	730	2,632
Harrison	5,829	716	143	169	1,022	47	20	24
Henry	20,098	2,663	8,588	10,484	11,714	3,591	3,379	8,220
Highland	18,006	1,548	5,174	3,094	3,679	1,527	2,415	535
Hocking	2,946	302	391	1,076	1,559	284	536	54
Holmes	12,337	6,177	5,832	1,875	4,121	1,287	5,107	2,591
Huron	22,836	3,076	9,986	1,298	4,990	832	2,976	7,515
Jackson	160	....	6	2	....	....	....	....
Jefferson	8,979	1,689	174	168	1,800	414	63	551
Knox	17,008	3,565	4,816	4,716	10,085	766	1,034	1,724
Lake	1,045	60	186	30	22	10	12	....
Lawrence	254	107	161	3	177	19	53	20
Licking	17,562	1,248	8,548	10,876	9,724	72	876	458
Logan	16,205	207	1,465	14,245	10,247	2,754	626	2,925
Lorain	6,741	638	1,083	387	822	281	535	655
Lucas	10,172	1,059	2,745	2,180	4,800	1,412	1,097	2,235
Madison	7,895	902	8,884	4,205	4,506	442	1,163	747
Mahoning	7,760	360	1,196	763	902	263	275	129
Marion	14,073	1,980	8,234	8,532	10,257	323	1,513	4,042
Medina	13,965	1,473	2,466	2,025	3,739	530	1,822	1,115
Meigs	444	36	48	106	111	10	25	33
Mercer	15,465	237	1,467	4,734	7,660	5,831	1,459	2,328
Miami	13,611	482	2,336	3,109	13,565	2,647	4,907	5,637
Monroe	5,574	33	7	76	172	....	18	67
Montgomery	16,286	888	3,589	4,605	10,737	3,066	6,741	2,217
Morgan	5,269	166	224	456	575	31	165	37
Morrow	17,085	2,350	13,370	8,737	6,830	396	443	2,182
Muskingum	6,170	587	427	853	822	12	176	9
Noble	2,451	28	152	128	188	2	2	8
Ottawa	8,748	1,635	1,592	191	830	723	767	670
Paulding	9,528½	513	2,047	2,606	8,234	1,656	2,805	3,238
Perry	9,933	967	1,326	2,117	1,624	355	835	359
Pickaway	15,320	1,579	7,735	12,957	13,361	5,274	5,517	1,634
Pike	3,590	588	1,278	2,078	1,594	929	789	200
Portage	10,644	945	478	561	2,027	859	2,291	1,281
Preble	14,593	1,307	6,076	6,814	8,438	3,339	5,064	1,364
Putnam	33,306	793	1,564	4,831	12,200	2,207	1,557	5,605
Richland	32,190	4,248	10,063	4,878	6,593	1,385	2,960	4,573
Ross	16,134	1,709	5,792	8,699	5,808	2,379	3,241	758

COMPARATIVE TABLE SHOWING PRODUCTION OF CLOVER SEED IN OHIO FOR EIGHT YEARS — Concluded.

Counties.	Bushels of Seed.							
	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Sandusky	20,430	3,503	3,775	4,764	7,446	2,692	2,823	4,418
Scioto	1,691	565	700	324	373	183	128	49
Seneca	34,620	3,412	12,549	14,378	14,960	3,357	5,231	6,846
Shelby	17,033	288	1,558	5,312	6,678	2,917	2,105	3,113
Stark	12,609	1,866	6,084	1,202	1,645	1,282	2,739	2,151
Summit	7,440	655	721	525	1,377	297	1,404	750
Trumbull	4,408	511	64	34	178	144	233	49
Tuscarawas	9,105	1,654	3,547	776	3,980	330	1,720	1,128
Union	7,747	608	3,994	3,686	4,967	395	1,057	753
Van Wert	10,959	380	974	2,270	5,069	2,906	1,584	1,828
Vinton	552	19	212	335	238	37	34	5
Warren	9,560	896	5,981	1,191	2,153	563	1,301	64
Washington	6,597	171	308	439	623	56	568	60
Wayne	17,741	5,637	9,812	4,316	4,135	1,855	6,065	4,510
Williams	17,736	4,621	7,866	8,170	14,777	5,396	7,336	9,034
Wood	21,372	4,032	5,089	6,708	18,801	3,345	5,149	8,479
Wyandot	18,510	1,864	7,520	10,890	9,226	1,095	2,103	4,094
Total product	1,032,531	111,210	339,290	342,472	489,258	121,028	165,145	191,264

Average product for 8 years 349,025 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF POTATOES IN OHIO FOR EIGHT YEARS.

Counties.	Number of Bushels.							
	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Adams	14,339	41,607	11,109	18,084	16,832	23,350	34,581	15,675
Allen	23,188	96,243	67,093	99,723	53,644	55,240	413,778	47,295
Ashland ..	62,779	110,031	145,224	93,217	64,442	67,240	98,403	60,510
Ashtabula ..	244,397	387,018	613,805	306,763	204,063	193,813	242,659	148.552
Athens	25,399	63,707	30,593	60,332	58,769	63,917	70,400	41,679
Auglaize ...	25,304	145,105	83,338	116,775	60,689	75,152	105,780	51,591
Belmont ...	58,726	71,118	46,414	108,389	140,346	183,101	138,033	98,483
Brown	29,013	91,901	49,616	50,425	21,216	56,658	102,539	43,927
Butler	63,323	192,155	144,883	121,501	76,658	106,384	121,746	51,730
Carroll	54,195	112,880	89,341	60,915	51,235	65,737	72,894	43,106
Champaign .	21,208	95,268	56,619	105,864	57,027	86,142	106,866	50,351
Clark	41,529	114,023	73,560	75,585	80,437	114,914	105,449	46,163
Clermont ..	62,456	124,647	81,737	82,216	67,118	107,087	107,918	67,049
Clinton ...	27,325	80,926	46,365	54,306	24,316	57,987	72,607	29,364
Columbiana.	149,302	265,009	326,347	169,694	163,737	236,879	166,352	94,998
Coshocton .	65,896	123,641	115,390	89,596	63,282	96,662	131,911	78,819
Crawford ..	73,451	134,246	228,213	102,915	70,850	73,915	136,519	63,337
Cuyahoga .	543,867	492,300	770,201	452,298	405,137	298,134	339,267	348.780
Darke	59,242	251,336	149,572	170,106	101,303	125,245	188,661	84,450
Defiance ..	51,514	105,928	87,436	90,554	68,863	48,656	145,140	55,203
Delaware ..	20,734	49,222	48,121	82,766	57,147	65,639	76,543	40,616
Erie	248,383	313,530	326,118	170,489	216,522	161,498	273,852	167,609
Fairfield ..	54,052	137,465	74,280	111,800	83,625	148,026	126,021	116,202
Fayette	10,757	17,240	9,443	15,846	10,907	31,552	27,968	10,391
Franklin ..	75,691	119,545	86,497	176,931	210,649	333,553	263,136	205,100
Fulton	88,576	112,681	148,790	112,759	139,344	68,727	197,218	101,195
Gallia	19,898	34,002	31,163	49,672	52,300	60,093	57,463	39,649
Geauga	225,630	303,396	391,486	194,325	155,127	107,202	108,257	90,349
Greene	48,760	95,699	63,470	209,305	51,076	72,717	84,781	32,703
Guernsey ..	33,776	52,423	20,095	45,034	47,243	56,557	68,332	37,114
Hamilton ..	261,545	456,580	282,563	281,924	327,756	424,669	469,333	240,980
Hancock ..	52,139	117,174	116,110	95,114	68,128	58,008	185,327	80,885
Hardin	47,392	125,952	484,884	208,507	106,087	122,215	165,655	83,498
Harrison ..	30,256	31,475	35,286	47,117	37,227	46,093	52,911	37,200
Henry	64,213	93,829	85,559	113,572	92,468	53,922	129,663	64,370
Highland ..	17,477	59,551	35,152	36,499	25,535	34,909	65,851	25,080
Hocking ..	38,270	76,213	43,057	53,244	50,765	51,565	67,459	34,608
Holmes ...	54,493	114,280	103,516	74,183	50,801	66,091	111,185	64,189
Huron	92,544	168,806	246,954	110,475	103,279	89,474	146,475	96,346
Jackson ...	13,791	45,390	15,515	24,764	16,489	27,883	28,710	12,141
Jefferson ..	57,466	96,305	79,009	65,647	98,300	136,822	130,623	63,396
Knox	39,236	103,199	108,101	80,383	53,188	64,492	97,304	60,046
Lake	166,067	186,031	255,631	162,467	171,606	99,683	100,479	82,783
Lawrence ..	18,633	42,400	24,306	27,417	42,095	30,790	39,085	16,716
Licking	69,427	170,258	104,574	136,196	99,660	143,892	170,563	87,300
Logan	22,955	63,674	49,411	86,830	39,129	58,329	72,404	48,320
Lorain	178,502	210,742	270,800	181,182	151,285	123,206	163,079	167,494
Lucas	251,471	335,961	260,356	210,048	248,175	156,153	326,224	219,421
Madison ..	13,372	32,803	14,385	30,679	26,896	44,733	39,732	18,535
Mahoning .	133,950	260,534	210,881	171,666	163,656	101,750	134,363	92,460
Marion	35,823	90,626	97,006	99,745	54,853	74,488	84,224	34,926
Medina	178,142	237,196	270,125	148,562	118,286	91,329	138,244	63,226
Meigs	52,378	92,278	55,884	86,550	81,984	117,378	100,708	69,231
Mercer	23,317	94,787	54,628	72,156	37,045	46,459	99,085	34,097
Miami	45,426	180,909	101,089	131,001	97,214	136,144	137,295	62,523
Monroe	81,186	77,965	37,130	94,118	104,605	121,784	116,333	83,376
Montgomery	58,772	189,518	93,431	118,813	89,253	120,126	171,223	63,626
Morgan ...	29,608	58,963	35,397	53,144	58,303	70,034	65,083	56,855
Morrow	55,672	92,307	112,076	90,431	52,973	54,297	86,052	47,939
Muskingum	57,078	114,463	82,136	113,779	112,857	148,913	137,705	70,401
Noble	35,949	45,793	26,378	48,977	63,002	77,991	70,680	37,597
Ottawa	33,258	50,535	58,804	34,557	29,380	24,185	51,082	30,549
Paulding ..	18,171	85,738	63,214	57,514	50,811	33,002	85,524	27,893
Perry	41,625	86,165	50,544	53,792	40,482	74,159	78,423	32,400
Pickaway ..	29,530	63,625	28.140	91,189	69,633	90,691	104,943	45,396
Pike	24,299	63,156	20,275	38,592	22,053	66,252	45,397	22,493
Portage	473,724	637,293	778,784	482,407	378,517	231,501	331,107	215,231
Preble	31,611	106,609	66,178	61,891	37,379	47,381	57,684	27,048
Putnam	48,615	133,975	99,537	34,341	65,535	54,797	172,016	64,063
Richland ...	113,671	237,819	253,721	158,051	88,658	104,790	161,158	93,450
Ross	42,483	107,610	39,823	125,347	140,307	144,341	148,960	75,624

COMPARATIVE TABLE SHOWING PRODUCTION OF POTATOES IN OHIO FOR EIGHT YEARS — Concluded.

Counties.	Number of Bushels.							
	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Sandusky ..	140,743	188,396	235,510	160,912	120,586	102,293	230,893	158,464
Scioto	58,348	103,940	57,618	95,255	84,786	87,898	93,924	49,886
Seneca	82,232	148,827	194,062	147,993	105,922	98,960	208,771	86,427
Shelby	25,364	109,525	57,520	70,271	33,207	49,689	82,751	33,320
Stark	258,558	412,341	437,378	240,987	249,616	221,361	237,907	179,238
Summit	215,308	287,431	316,211	207,741	160,242	139,320	192,556	122,912
Trumbull ..	207,751	453,529	493,047	280,690	242,470	194,852	202,998	148,590
Tuscarawas.	144,449	274,624	246,514	170,396	131,705	174,543	196,494	127,316
Union	12,092	35,317	20,972	45,110	26,809	31,692	52,286	20,898
Van Wert ..	25,393	86,270	58,120	75,175	37,337	43,321	114,448	39,418
Vinton	22,446	51,432	27,558	28,665	30,194	36,405	35,030	27,359
Warren	36,788	162,799	58,702	48,970	40,195	59,053	80,158	32,786
Washington.	103,866	117,174	78,869	150,990	163,630	201,767	193,265	138,757
Wayne	150,250	274,178	315,879	177,390	115,030	98,126	166,529	107,933
Williams ..	44,184	70,573	79,983	63,886	68,125	59,662	136,965	64,427
Wood	70,222	103,283	86,775	95,878	105,530	82,114	175,748	89,651
Wyandot ..	32,361½	80,716	126,330	69,260	42,453	51,303	68,573	35,155
Total prod.	7,286,582	12,906,134	12,557,717	10,069,933	8,436,397	8,839,136	11,793,716	6,678,245
Total area	114,832	153,362	253,884	157,923	122,258	118,189	117,242	114,539

Average area for 8 years 144,029 acres.
Average product for 8 years 9,820,983 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF TOBACCO IN OHIO FOR EIGHT YEARS.

Counties.	Pounds of Tobacco.							
	1897.	1896.	1985.	1894.	1893.	1892.	1891.	1890.
Adams	786,098	1,307,617	917,280	2,859,385	2,233,204	2,886,150	2,782,532	2,503,868
Allen	520	....	....	....	....	100	....	....
Ashland ...	2,995	4,800	5,600	2,500	9,320	12,897	5,787	5,256
Ashtabula ..	....	....	....	....	....	....	200	1,200
Athens	3,700	6,010	300	8,800	5,130	20,650	9,200	8,900
Auglaize ...	4,100	7,880	6,580	16,600	23,140	16,480	11,560	7,400
Belmont ...	1,226,297	1,306,728	639,956	892,332	1,552,846	1,142,864	834,501	655,818
Brown	2,008,930	2,522,900	2,337,186	3,712,431	3,344,460	3,994,293	4,492,314	3,989,106
Butler	531,662	371,920	468,091	452,305	546,413	799,202	818,516	455,224
Carroll	....	....	....	....	....	....	....	....
Champaign .	19,100	16,474	18,400	15,850	16,600	25,805	5,000	3,360
Clark	150,260	121,737	14,566	145,141	153,035	34,445	135,725	116,939
Clermont ..	991,950	1,301,950	1,316,965	2,165,843	1,716,210	2,209,680	2,103,507	2,500,784
Clinton	23,590	76,500	16,500	33,500	4,900	26,850	51,696	55,200
Columbiana.	....	....	50	....	....	....	....	....
Coshocton .	....	....	....	200	....	....	....	215
Crawford ..	....	....	215	....	550	....	....	....
Cuyahoga ..	....	....	....	....	100	250	....	520
Darke	5,768,440	2,700,049	3,309,618	3,909,870	4,603,765	6,566,057	5,990,050	3,750,460
Defiance ...	3,600	3,400	....	2,850	2,240	2,650	4,300	2,000
Delaware ..	....	....	....	....	....	191	100	....
Erie	80	100	....	....	....	1,300	80	....
Fairfield ...	4	200	800	40	500	100	....	2,500
Fayette	....	30	....	....	....	....	200	266
Franklin ...	....	20	10	....	....	....	....	740
Fulton	....	....	....	....	....	....	....	....
Gallia	235,955	475,400	483,643	506,253	586,471	455,725	312,905	300,645
Geauga	24	....	....	75	....	....	....	1,800
Greene	190,540	79,650	128,810	214,776	131,908	183,926	272,281	142,630
Guernsey ..	218,945	252,635	99,087	185,285	161,460	166,704	155,167	137,106
Hamilton ..	106,940	174,120	44,599	211,411	226,633	145,058	178,000	233,189
Hancock ...	25¼	....	35	....	60	....	....	....
Hardin	....	....	....	....	....	....	350	....
Harrison ..	....	80	....	4	....	....	....	....
Henry	....	....	....	100	150	6,425	500	....
Highland ..	14,060	9,570	9,000	52,945	60,925	63,100	75,150	191,415
Hocking ...	120	550	....	250	1,200	....	....	....
Holmes	75	....	....	300	1,000	....	8,675	6,150
Huron	....	....	....	....	....	2,530	....	100
Jackson ...	....	....	....	....	....	65	....	....
Jefferson ..	....	192	....	....	....	40	....	....
Knox	....	....	50	300	....	....	....	....
Lake	650	2,000	4,000	3,900	....	52,570	9,900	16,500
Lawrence ..	17,800	23,700	40,530	23,775	....	....	22,380	33,925
Licking	....	....	142	....	....	....	....	....
Logan	15	31,048	11,755	27,750	19,500	14,000	59,075	71,770
Lorain	....	....	186	....	....	....	....	40
Lucas	....	100	....	....	....	....	....	....
Madison ...	....	....	600	600	50	....	....	....
Mahoning .	....	....	....	....	....	....	....	....
Marion	100	....	....	....	....	....	....	25
Medina	134,500	110,450	180,627	231,471	270,600	283,266	363,660	265,759
Meigs	9,330	10,025	5,000	4,050	690	....	....	5,600
Mercer	1,025	....	....	6,394	1,850	7,495	3,700	2,200
Miami	1,964,420	1,126,102	903,259	1,234,815	1,488,893	2,289,255	1,479,835	1,128,270
Monroe ...	1,293,479	1,496,205	748,578	1,334,203	1,864,740	1,580,663	1,073,317	1,045,445
Montgomery	7,132,269	5,227,139	5,459,681	6,801,150	5,114,350	10,536,274	8,768,756	6,308,998
Morgan ...	60,270	153,525	93,285	283,090	377,454	275,260	231,645	187,773
Morrow ...	....	32	....	....	258	....	....	....
Muskingum.	3,800	9,200	2,500	4,000	8,130	4,860	639	....
Noble	833,680	1,321,737	601,408	1,163,432	2,534,436	1,141,891	899,572	762,832
Ottawa	....	....	....	....	....	....	....	....
Paulding ..	800	620	....	4,020	2,775	11,420	8,500	....
Perry	1,500	....	3,000	320	1,285	2,850	405	50
Pickaway ..	....	40	....	....	150	....	....	....
Pike	22,910	27,900	8,100	30,825	21,500	21,825	19,080	20,770
Portage	1,000	50	....	....	200	3,800	620	3,200
Preble	3,128,000	1,838,148	2,103,300	2,274,123	1,840,017	2,554,326	2,973,224	1,775,316
Putnam	320	70	....	....	....	100	....	880
Richland ..	....	....	....	....	....	....	....	....

COMPARATIVE TABLE SHOWING PRODUCTION OF TOBACCO IN OHIO FOR EIGHT YEARS — Concluded.

Counties.	Pounds of Tobacco.							
	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Ross	....	5,450	2,300	26,800	18,230	22,130	13,819	1,220
Sandusky ..	....	....	....	....	....	....	....	....
Scioto	182,275	237,160	77,400	365,887	228,550	127,150	127,855	203,495
Seneca	....	....	....	....	75	....	....	85
Shelby	37,968	17,000	10,600	35,800	47,620	66,375	89,357	23,225
Stark	4,100	....	950	....	....	9,700	4,441	3,650
Summit	....	....	....	3,600	5,700	5,000	6,350	9,980
Trumbull ..	....	....	....	....	....	....	250	3,500
Tuscarawas.	....	300	....	200	....	....	102	2,800
Union	....	125	125	300	....	....	....	125
Van Wert ..	25	....	....	....	....	2,500	700	....
Vinton	190	25	....	....	....	600	100	100
Warren	1,796,522	1,506,088	4,244,240	1,819,056	1,591,990	2,216,868	1,912,887	1,168,733
Washington	78,934	124,613	72,930	269,119	465,981	308,353	181,364	174,592
Wayne	248,315	186,825	209,490	235,112	220,750	335,765	262,645	346,161
Williams ..	....	....	....	....	3,500	2,000	....	....
Wood	....	....	....	....	....	....	125	280
Wyandot ..	18	....	....	....	....	....	395	40
Total prod.	29,242,225	24,196,189	24,601,327	31,573,098	31,511,464	40,639,833	36,762,994	28,645,130
Total area	40,823	34,608	32,856	41,594	50,543	46,986	41,354	39,283

Average area for 8 years 41,006 acres.
Average product for 8 years 30,896,534 pounds.

COMPARATIVE TABLE SHOWING PRODUCTION OF BUCKWHEAT IN OHIO FOR EIGHT YEARS.

Counties.	Number of Bushels.							
	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Adams	158	42	13	4	64	93	123	21
Allen	188	602	41	235	246	1,265	1,598	1,190
Ashland	2,432	4,508	2,501	815	938	2,744	1,837	1,506
Ashtabula	55,960	71,929	89,775	49,181	35,571	38,476	27,607	21,351
Athens	346	506	280	279	236	444	748	481
Auglaize	1,022	4,909	1,222	1,412	1,442	2,605	2,633	820
Belmont	1,234	2,017	1,266	248	1,142	369	1,535	509
Brown	156	87	....	20	40	121	230	360
Butler	56	1,097	14	203	128	26	402	206
Carroll	821	3,071	2,936	551	1,233	1,343	1,444	1,186
Champaign	870	1,171	989	1,340	979	292	1,235	555
Clark	172	196	147	244	569	88	508	958
Clermont	200	231	169	53	324	217	478	776
Clinton	325	935	237	128	72	479	698	536
Columbiana	2,058	5,019	6,952	1,722	1,875	2,309	2,265	2,829
Coshocton	1,444	6,025	4,457	1,075	1,605	1,830	1,631	1,006
Crawford	1,090	2,241	904	1,152	923	1,434	461	1,645
Cuyahoga	279	315	1,276	321	81	498	195	387
Darke	1,354	2,228	820	331	198	1,502	1,781	1,034
Defiance	2,812	2,166	284	1,965	898	2,322	4,389	5,317
Delaware	975	1,426	265	516	1,167	1,618	1,476	2,284
Erie	4,582	11,342	4,673	4,261	3,084	6,548	5,741	6,991
Fairfield	182	762	828	150	68	183	211	386
Fayette	47	385	....	320	25	53	122	16
Franklin	1,946	2,469	323	927	829	1,658	1,660	929
Fulton	7,208	8,119	4,300	7,408	5,722	5,888	8,782	16,730
Gallia	200	272	64	167	71	335	549	238
Geauga	5,487	6,988	5,975	2,409	2,955	6,452	3,912	3,375
Greene	176	468	50	5	46	92	114	140
Guernsey	1,738	2,880	872	885	7,489	1,217	2,032	1,824
Hamilton	60	674	30	....	40	494	251	183
Hancock	1,049	1,009	449	695	509	1,444	3,156	3,169
Hardin	658	1,330	550	1,563	922	1,480	1,840	2,008
Harrison	241	1,118	983	485	315	480	639	785
Henry	3,627	3,131	28,426	2,254	1,308	2,001	2,915	6,871
Highland	141	508	85	108	102	135	144	151
Hocking	1,127	2,830	3,623	1,303	622	1,200	1,113	553
Holmes	1,032	4,256	3,727	836	943	1,970	1,833	1,651
Huron	3,182	4,465	2,437	1,714	838	2,949	3,657	5,010
Jackson	1,823	1,129	658	206	249	872	385	215
Jefferson	303	997	972	429	288	503	496	363
Knox	1,634	10,182	3,510	583	1,138	2,516	1,845	2,040
Lake	917	2,895	3,086	2,138	741	879	1,569	1,890
Lawrence	119	307	161	50	29	111	....	166
Licking	2,904	9,928	1,396	900	1,334	2,302	1,082	757
Logan	1,370	2,385	1,287	1,210	331	1,351	927	1,074
Lorain	561	1,092	675	838	691	1,373	188	402
Lucas	10,232	10,028	6,799	7,393	4,812	5,196	9,786	9,229
Madison	62	278	37	185	133	192	399	114
Mahoning	2,559	5,135	2,674	1,319	8,233	4,534	2,547	3,565
Marion	325	343	434	179	379	912	1,429	1,480
Medina	1,226	4,439	952	373	644	861	1,169	560
Meigs	233	242	142	41	492	200	376	206
Mercer	754	1,909	238	296	174	4,323	1,211	1,111
Miami	25	261	55	26	242	337	627	274
Monroe	1,918	5,475	6,688	1,134	1,423	2,256	3,497	1,747
Montgomery	20	180	190	48	129	69	98	55
Morgan	518	1,352	1,063	828	512	699	2,008	760
Morrow	1,049	1,251	495	465	771	1,364	1,327	2,469
Muskingum	360	607	480	184	412	800	616	326
Noble	365	732	645	28	279	550	876	253
Ottawa	355	759	530	213	13	634	927	824
Paulding	4,401	1,700	186	693	522	4,747	3,114	5,798
Perry	1,148	1,579	907	849	936	1,181	1,484	711
Pickaway	....	42	10	3,838	70	355	152	55
Pike	933	1,402	365	794	85	868	424	153
Portage	9,237	12,327	6,778	2,373	3,578	4,435	3,985	3,791
Preble	54	163	12	54	105	360	518	356
Putnam	1,681	1,933	614	644	192	2,162	1,159	3,811
Richland	1,773	3,138	2,679	734	902	2,970	618	1,998
Ross	272	1,393	217	706	140	154	238	398

COMPARATIVE TABLE SHOWING PRODUCTION OF BUCKWHEAT IN OHIO FOR EIGHT YEARS — Concluded.

Counties.	Number of Bushels.							
	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Sandusky	453	2,074	1,265	1,583	855	1,385	2,119	2,455
Scioto	652	1,723	1,767	1,267	161	866	1,132	447
Seneca	479	1,006	465	504	283	1,072	1,263	2,387
Shelby	1,357	4,777	2,468	1,728	1,191	1,298	1,457	7,802
Stark	1,197	3,329	3,086	690	541	1,316	1,240	1,891
Summit	2,027	3,761	3,100	1,027	1,101	1,129	1,492	1,654
Trumbull	15,846	24,074	18,546	8,552	5,937	12,119	7,821	10,045
Tuscarawas	1,801	4,694	2,171	1,158	2,191	1,718	2,778	1,550
Union	935	2,327	68	255	58	1,464	1,075	1,525
Van Wert	2,259	795	262	710	292	3,953	2,005	3,402
Vinton	805	1,455	1,650	656	388	835	702	532
Warren	905	579	56	41	136	163	398	151
Washington	1,537	2,492	1,994	913	1,423	1,638	2,784	1,324
Wayne	1,116	2,662	2,295	630	601	1,536	985	1,136
Williams	2,013	1,946	808	948	517	2,011	1,744	3,408
Wood	2,823	3,052	806	930	1,762	2,974	2,764	6,727
Wyandot	329	801	300	655	215	1,107	1,064	637
Total product	192,300	310,859	258,024	139,203	123,295	181,339	169,785	190,991
Total area	14,811	19,932	16,423	12,003	9,876	14,197	12,537	13,968

Average area for 8 years 14,218 acres.
Average product for 8 years 195,725 bushels

COMPARATIVE TABLE SHOWING PRODUCTION OF FLAX SEED IN OHIO FOR EIGHT YEARS.

Counties.	Number of bushels.							
	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Adams	....	....	7	1	....	....	56	....
Allen	17	185	108	130	207	211	252	532
Ashland	9,015	12,848	23,708	23,859	5,712	3,155	9,801	12,167
Ashtabula	....	502	195	71	....	170	534	268
Athens	....	....	....	....	....	....	....	....
Auglaize	126	....	257	20	....	168	837	2,428
Belmont	....	....	....	....	....	....	....	....
Brown	....	....	....	....	....	....	....	....
Butler	....	500	....	35	35	....	40	88
Carroll	....	....	18	....	28	37	....	....
Champaign	30	60	....	208	275	....	1,063	2,823
Clark	....	....	129	5	384	291	371	1,211
Clermont	....	....	....	....	....	....	....	....
Clinton	....	....	....	....	19	....	....	....
Columbiana	....	....	....	....	55	....	44	....
Coshocton	....	....	....	2	....	....	....	....
Crawford	1,022	2,195	3,965	2,691	1,230	1,406	4,721	4,667
Cuyahoga	60	60	....	....	....	....	....	....
Darke	....	188	10	269	343	1,111	6,342	17,302
Defiance	....	10	....	....	....	....	....	50
Delaware	....	90	....	....	....	16	552	301
Erie	....	....	....	16	....	....	621	1,373
Fairfield	....	....	....	....	....	4	....	....
Fayette	62	....	....	12	4	....	405	865
Franklin	....	....	....	....	....	20	....	....
Fulton	10	128	385	176	190	60	217	395
Gallia	10	5	....	....	....	....	....	....
Geauga	60	336	653	845	172	99	884	518
Greene	70	266	261	....	....	....	185	1,260
Guernsey	12	8	....	3	7	....	....	....
Hamilton	....	....	....	....	....	....	....	....
Hancock	92	152	63	....	25	....	676	1,597
Hardin	....	200	132	235	56	193	153	342
Harrison	....	....	....	4	1,850	....	14	....
Henry	54	5	38	....	....	....	....	150
Highland	....	51	....	....	....	....	....	25
Hocking	....	4	....	....	31	4	....	....
Holmes	....	....	....	15	....	....	19	162
Huron	1,965	6,469	8,738	2,974	1,398	1,151	3,038	4,268
Jackson	....	....	2	....	....	....	....	....
Jefferson	....	5	6	106	12	6	10	8
Knox	....	40	4	....	....	488	1,654	1,902
Lake	....	....	....	....	....	....	....	....
Lawrence	....	....	....	....	....	....	....	30
Licking	....	....	6	....	....	13	486	1,067
Logan	....	250	9	50	48	8	280	245
Lorain	1,320	2,148	1,235	600	739	174	1,927	3,062
Lucas	245	90	402	454	115	355	905	2,739
Madison	....	....	....	....	....	....	....	....
Mahoning	45	487	332	345	145	202	376	924
Marion	779	84	40	65	348	264	1,383	1,534
Medina	4,370	7,611	8,434	6,547	4,164	7,538	17,755	14,719
Meigs	....	....	1,991	....	20	....	18	35
Mercer	13	33	....	....	....	37	612	803
Miami	880	275	240	624	320	1,242	3,769	15,860
Monroe	1	36	16	28	4	....	....	....
Montgomery	7	48	190	189	....	54	1,237	2,771
Morgan	....	....	....	....	....	....	....	....
Morrow	....	95	101	95	....	128	2,842	2,599
Muskingum	....	....	....	....	....	15	....	....
Noble	....	....	....	....	....	....	....	....
Ottawa	....	....	....	....	....	25	....	50
Paulding	40	95	20	17	15	81	30	....
Perry	....	....	....	2	27	....	3	10
Pickaway	....	....	....	....	....	....	176	527
Pike	....	....	....	....	....	....	....	....
Portage	404	633	796	344	249	16	1,951	2,520
Preble	344	232	491	907	738	1,996	5,805	9,608
Putnam	2	....	....	....	30	....	....	32
Richland	1,415	4,900	4,797	2,296	378	387	2,423	2,748
Ross	....	....	....	....	....	....	....	50

COMPARATIVE TABLE SHOWING PRODUCTION OF FLAX SEED IN OHIO FOR EIGHT YEARS — Concluded.

Counties.	Number of bushels.							
	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Sandusky	....	....	....	37	....	2	100	....
Scioto	....	28	20	....	....	....	....	8
Seneca	80	202	41	202	....	....	618	918
Shelby	277	111	....	1,166	166	535	3,378	5,758
Stark	7½	20	66	13	42	....	....	68
Summit	....	....	....	....	....	....	....	....
Trumbull	518	1,792	3,106	2,286	744	986	4,208	4,017
Tuscarawas	....	....	26	7	9	....	15	....
Union	6	....	....	....	....	55	74	....
Van Wert	15	....	60	60	....	9	135	503
Vinton	2	30	....	....	....	....	....	....
Warren	....	....	....	....	....	5	62	80
Washington	4	....	....	4	....	....	....	....
Wayne	2,261	3,948	5,677	4,824	2,794	2,266	4,162	4,343
Williams	....	....	....	....	....	....	....	62
Wood	....	150	418	360	105	20	....	....
Wyandot	....	....	....	100	....	....	....	....
Total product	25,640	47,605	67,223	43,302	23,233	25,003	87,219	132,392

Average product for 8 years 56,452 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF FLAX IN OHIO FOR EIGHT YEARS.

Counties.	Pounds of Fiber.							
	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Allen	....	....	....	....	....	9	....	6,000
Ashland	522,500	986,550	838,407	1,464,600	607,600	204,300	516,800	365,400
Ashtabula	....	3,300	....	....	....	2,000	14,000	....
Athens	....	....	....	....	....	4,000	27,500	57,500
Carroll	....	....	....	....	1,000	....	....	....
Champaign	....	....	....	....	....	....	10,000	6,000
Clark	....	....	....	....	15,000	8,500	12,000	16,000
Crawford	5	8,000	70,000	....	16,000	13,780	87,540	109,000
Darke	....	....	....	5,700	....	46,000	77,100	142,100
Delaware	....	....	....	....	....	....	6	10,000
Erie	....	....	....	....	....	....	1,606	....
Fairfield	....	....	....	....	....	4	80,000	....
Geauga	....	5,006	21,930	41,000	4,000	80,000	18,000	21,600
Greene	....	....	6,000	....	....	....	6,000	5,000
Huron	90,115	250,680	502,804	154,208	135,800	65,200	139,100	147,000
Knox	....	....	....	....	....	....	125	....
Lawrence	....	....	....	....	....	....	323	....
Licking	....	....	....	....	....	43	....	4,000
Lorain	59,010	41,500	45,000	21,700	18,900	6,000	72,600	75,001
Lucas	....	....	158	....	....	....	350	1,400
Mahoning	....	7,000	6	....	4,000	8,000	13,000	51,506
Marion	....	....	....	....	....	128	23,600	26,000
Medina	37,514	121,200	232,300	324,900	196,300	266,040	667,800	707,612
Mercer	....	....	....	....	....	....	6,000	13,053
Miami	84,800	22,000	3,000	21,400	20,100	54,003	226,700	469,260
Montgomery	....	100	....	9,000	....	....	79,104	134,802
Morrow	....	....	....	....	10	....	104	....
Portage	29,500	56,400	25,000	19,800	6,000	710	63,600	105,300
Preble	....	....	....	10,000	6,001	34,300	30,070	752,900
Richland	42,650	275,400	215,100	93,000	3,112	5,000	71,700	57,990
Sandusky	....	....	....	....	....	....	10,000	....
Seneca	....	10	435	....	....	....	....	....
Shelby	1,603	....	....	15,000	16,820	9,500	132,900	81,600
Stark	4	....	....	....	6,000	....	....	....
Trumbull	19,000	165,700	102,235	108,300	30,500	15,600	225,580	186,900
Van Wert	....	....	....	....	....	....	....	6,000
Wayne	126,600	275,300	258,560	657,800	168,100	227,130	84,900	145,267
Total product.	1,013,301	2,218,146	2,320,935	2,946,408	1,255,243	1,050,247	2,698,108	3,704,191

Average product for 8 years 2,150,822 pounds.

COMPARATIVE TABLE SHOWING PRODUCTION OF BROOM CORN IN OHIO FOR EIGHT YEARS.

Counties.	Pounds of broom brush.							
	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Adams	2,387	500	600	300	1,000	2,125	837	500
Allen	....	....	....	50	....	800	....	....
Ashland	400	3,110	3,900	1,800	....	2,322	6,420	120
Ashtabula	....	....	450	....	1,000	1,000	22	....
Athens	....	....	....	....	....	200	....	1,411
Auglaize	162,000	90,100	248,020	175,750	121,900	34,700	30,100	....
Belmont	2,320	5,008	4,320	2,468	670	2,200	....	109
Brown	2,693	550	3,300	2,380	825	800	1,200	....
Butler	13,800	33,000	20,500	24,400	37,200	36,250	68,500	93,950
Carroll	....	....	....	....	....	....	....	....
Champaign	21,650	....	7,600	82,550	52,000	86,332	52,900	96,790
Clark	....	....	....	....	....	500	3,400	1,200
Clermont	....	....	2,000	4,350	21,400	1,700	500	2,000
Clinton	1,610	....	400	1,000	2,300	1,565	....	....
Columbiana	800	350	247	....	....	600	450	600
Coshocton	....	....	30	....	50	2,680	....	....
Crawford	1,000	....	....	....	....	700	4,600	....
Cuyahoga	....	....	....	....	120	....	....	....
Darke	3,650	17,022	36,520	58,210	22,100	28,300	18,465	12,925
Defiance	3,200	200	....	....	....	....	....	....
Delaware	....	....	....	2,300	1,000	17,600	1,075	1,400
Erie	4,000	10,600	2,000	15,000	....	....	3,000	....
Fairfield	350	145,250	801	1,100	9,700	6,900	750	1,800
Fayette	6,000	300	4,200	18,000	9,000	12,855	26,500	4,000
Franklin	4,550	6,000	4,500	28,550	43,400	29,300	24,800	113,605
Fulton	1,700	2,000	....	....	1,200	1,800	2,250	4,200
Gallia	....	3,600	....	135	....	....	....	400
Geauga	....	1,400	....	....	....	....	82	....
Greene	500	4,000	....	8,000	8,200	9,900	3,000	2,900
Guernsey	800	....	....	....	....	140	....	....
Hamilton	....	1,300	12,800	7,000	5,089	10,424	1,055	10,000
Hancock	520	3,000	....	....	....	2,260	....	312
Hardin	1,000	310	200	22,000	2,700	16,060	40,000	....
Harrison	....	....	100	....	....	....	25	....
Henry	4,000	4,550	....	....	....	....	3,000	3,000
Highland	8,000	....	900	2,600	465	11,200	10,500	9,600
Hocking	2,090	450	3,400	2,800	300	....	....	....
Holmes	2,000	....	400	2,100	....	....	2,261	273
Huron	....	....	....	1,200	600	900	18,000	700
Jackson	....	....	....	....	....	....	....	....
Jefferson	....	....	....	2,209	510	370	....	....
Knox	....	....	1,910	....	....	....	1,900	....
Lake	....	....	4,000	....	....	....	....	....
Lawrence	3,700	2,427	3,000	1,500	800	....	....	....
Licking	3,150	8,010	2,500	5,200	11,500	....	....	2,700
Logan	....	....	27,000	22,600	....	1,400	300	....
Lorain	3,809	....	2,400	....	....	800	....	800
Lucas	....	5,000	....	1,500	....	....	150	1,080
Madison	....	....	2,000	....	1,600	1,500	....	....
Mahoning	....	....	....	....	36	300	1,000	2,000
Marion	....	5,639	....	....	....	75	....	115
Medina	....	....	1,400	....	....	....	1,560	1,825
Meigs	1,400	1,045	5,930	....	1,850	8,600	6,000	940
Mercer	2,100	3,000	14,200	6,000	2,300	70	....	....
Miami	4,000	....	3,625	14,500	6,300	14,000	6,130	36,712
Monroe	25	145,400	50	100	....	160	....	....
Montgomery	1,400	....	25,600	33,000	23,970	3,150	4,640	5,620
Morgan	310	....	540	35	171	240	100	....
Morrow	....	....	....	1,550	....	118	....	....
Muskingum	300	500	100	....	....	....	23	1,200
Noble	2,000	....	502	471	....	1,200	300	....
Ottawa	....	....	....	....	....	....	....	....
Paulding	....	....	....	....	....	....	....	....
Perry	900	....	....	75	154	....	2,000	....
Pickaway	....	....	66,000	64,000	85,200	125,000	....	104,000
Pike	2,000	300	200	2,000	1,000	....	800	84
Portage	700	....	200	....	400	....	....	....
Preble	4,820	67,000	9,300	3,842	10,050	26,800	16,000	6,800
Putnam	15,000	700	500	40	....	....	....	....
Richland	700	1,460	....	5,675	2,600	....	380	....
Ross	3,000	....	....	200	306	2,000	....	400

COMPARATIVE TABLE SHOWING PRODUCTION OF BROOM CORN IN OHIO FOR EIGHT YEARS.—Concluded.

Counties.	Pounds of broom brush.							
	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Sandusky	....	....	109	....	....	1,200	1,500	500
Scioto	2,070	1,000	3,944	....	....	45	500	525
Seneca	....	700	....	....	125	....	....	....
Shelby	4,400	7,200	....	99	5,100	800	1,700	1,065
Stark	....	....	....	800	1,000	170	116	17
Summit	....	....	....	1,200	....	45	....	....
Trumbull	....	....	....	....	50	....	....	1,500
Tuscarawas	8,000	3,090	1,500	....	130	430	....	....
Union	2,500	7,850	5,600	2,354	....	3,700	2,000	15,000
Van Wert	....	....	250	....	....	....	1,600	....
Vinton	100	....	....	1,150	....	18	....	3,400
Warren	....	1,000	....	....	....	....	8,754	5,200
Washington	....	....	....	200	....	....	....	....
Wayne	....	50	1,755	1,105	20	22,420	1,168	1,505
Williams	....	....	400	1,800	....	450	4,500	9,515
Wood	....	....	1,500	....	160	....	....	700
Wyandot	....	....	....	....	....	1,300	65	....
Total product ..	317,404	593,971	543,203	637,248	497,551	538,474	386,878	564,998
Total area	781	979	1,053	1,125	1,582	1,081	763	1,608

Average area for 8 years 1,121 acres.
Average product for 8 years 509,966 pounds.

COMPARATIVE TABLE SHOWING USE OF COMMERCIAL FERTILIZER FOR SIX YEARS.

Counties.	Pounds used during 1897.	Pounds used during 1896.	Pounds used during 1895.	Pounds used during 1894.	Pounds used during 1893.	Pounds used during 1892.
Adams	2,268,462	2,101,680	2,381,250	2,569,700	2,785,820	2,766,550
Allen	104,924	180,475	369,900	273,100	146,140	152,130
Ashland	2,095,100	1,382,973	1,751,900	1,401,600	1,163,585	1,320,330
Ashtabula	3,999,040	3,468,633	4,668,300	3,690,504	3,343,866	3,625,985
Athens	1,609,405	1,414,960	1,709,990	1,104,640	1,291,083	1,147,436
Auglaize	58,600	25,500	19,800	4,100	....	8,800
Belmont	2,140,275	1,777,607	1,623,377	1,082,648	1,168,036	1,299,550
Brown	1,218,577	1,038,700	1,671,600	1,839,765	1,481,161	1,585,814
Butler	214,100	143,250	145,450	186,625	120,690	272,500
Carroll	1,703,125	1,213,670	1,053,103	852,648	819,830	893,150
Champaign	841,820	788,630	1,354,070	694,750	744,540	564,940
Clark	646,800	396,708	578,500	246,016	178,450	237,778
Clermont	753,600	649,535	1,122,980	995,718	975,553	1,231,420
Clinton	665,048	336,560	795,230	420,000	727,011	895,420
Columbiana	3,255,009	2,763,300	2,563,700	2,183,950	2,258,595	2,339,126
Coshocton	1,163,050	827,454	1,286,006	760,186	747,825	680,550
Crawford	1,067,488	711,020	1,116,918	707,600	528,610	767,400
Cuyahoga	2,984,390	3,539,340	3,351,100	3,974,950	3,743,960	3,422,040
Darke	694,410	582,515	926,900	587,980	415,980	527,000
Defiance	57,450	32,000	46,500	45,320	19,000	18,550
Delaware	237,456	295,000	665,680	407,430	399,459	543,450
Erie	674,760	683,290	536,501	344,500	430,424	824,815
Fairfield	1,885,490	1,408,600	2,503,250	1,394,252	1,257,030	1,689,328
Fayette	782,171	596,436	745,700	406,800	316,064	256,604
Franklin	200,701	252,750	621,375	273,816	278,450	263,450
Fulton	104,900	28,900	86,100	102,750	96,160	143,600
Gallia	2,479,963	1,750,005	1,654,000	1,298,476	1,435,245	1,104,490
Geauga	2,313,150	1,882,823	2,298,515	1,951,406	1,944,155	1,819,022
Greene	261,940	123,300	575,900	332,620	304,800	353,570
Guernsey	1,789,000	1,402,200	1,681,505	987,435	1,064,792	1,159,680
Hamilton	....	....	....	....	....	....
Hancock	231,350	263,555	449,340	213,400	189,750	25,720
Hardin	34,850	100,200	175,900	65,400	23,700	43,750
Harrison	1,316,690	726,105	737,638	487,350	455,650	524,910
Henry	40,300	26,900	45,600	8,350	32,172	54,000
Highland	3,251,640	2,397,020	3,149,200	2,011,750	2,036,730	2,216,339
Hocking	2,027,768	2,002,923	1,622,515	1,402,640	1,398,065	1,598,115
Holmes	1,388,720	1,210,950	1,408,280	667,224	924,022	933.414
Huron	2,794,010	2,014,068	2,735,670	1,939,160	1,862,865	2,752,824
Jackson	1,934,568	1,484,910	2,086,300	1,469,915	1,308,360	1,190,115
Jefferson	1,447,120	1,221,682	1,601,339	899,400	802,790	884,650
Knox	1,867,825	1,405,140	2,110,998	2,041,318	1,334,675	1,398,315
Lake	550,429	681,700	966,400	1,066,800	1,025,100	803,110
Lawrence	205,350	211,125	162,995	85,600	124,150	63,250
Licking	1,346,860	1,104,810	2,013,290	977,150	1,125,827	1,414,510
Logan	193,890	161,300	160,200	217,750	75,300	132,070
Lorain	2,517,699	1,740,420	2,384,951	1,380,519	1,424,040	1,698,046
Lucas	81,400	118,700	192,900	178,150	138,800	106,700
Madison	8,000	....	44,000	1,000	33,600	3,000
Mahoning	3,992,194	2,965,486	4,172,897	2,543,729	2,330,422	2,427,241
Marion	81,700	90,910	114,012	16,100	22,700	38,550
Medina	4,399,290	3,257,420	4,417,645	3,062,000	3,260,937	3,740,094
Meigs	2,378,017	1,955,889	2,407,860	1,525,990	1,809,080	1,783,150
Mercer	68,100	8,500	26,900	5,100	7,500	19,200
Miami	696,650	672,460	661,043	397,160	367,500	392,800
Monroe	1,890,260	1,585,502	1,540,260	1,053,431	1,080,584	1,134,820
Montogmery	2,175,490	1,437,850	1,525,930	997,010	1,139,540	1,546,228
Morgan	2,370,659	1,942,650	2,432,358	1,743,561	1,531,670	1,336,609
Morrow	1,811,375	856,191	1,669,270	947,100	872,710	1,087,662
Muskingum	3,258,748	2,648,795	2,892,991	1,502,046	1,714,000	2,009,678
Noble	1,000,100	1,090,089	1,186,620	470,310	476,980	538,775
Ottawa	7,400	600	5,800	2,500	7,000	3,400
Paulding	1,700	4,920	5,300	....	5,800	29,200
Perry	3,437,350	2,751,630	3,033,916	2,115,580	2,014,200	2,064,700
Pickaway	452,700	543,050	378,500	184,044	258.200	249,500
Pike	1,917,743	1,771,050	1,522,140	1,547,080	1,431,400	1,614,800
Portage	3,698,352	3,208,740	3,476,300	2,778,452	2,435,954	2,793,395
Preble	3,406,290	3,581,750	3,943,100	3,285,450	3,079,140	2,775,170
Putnam	2,600	....	5,000	2,900	....	800
Richland	2,745,460	1,748,700	2,775,207	1,285,430	1,232,380	1,614.370
Ross	1,335,642	1,352,850	1,608,255	1,504,360	1,098,400	1,049,688

COMPARATIVE TABLE SHOWING USE OF COMMERCIAL FERTILIZER FOR SIX YEARS — Concluded.

Counties.	Pounds used during 1897.	Pounds used during 1896.	Pounds used during 1895.	Pounds used during 1894.	Pounds used during 1893.	Pounds used during 1882.
Sandusky	284,400	272,085	181,226	121,850	176,750	121,400
Scioto	1,526,890	1,913,312	1,607,544	1,319,295	1,674,125	2,004,296
Seneca	1,900,840	1,458,930	2,623,150	969,900	1,232,830	1,285,450
Shelby	361,570	533,670	731,750	221,950	71,300	142,100
Stark	2,268,469	2,157,900	2,695,854	1,913,388	1,722,310	1,911,210
Summit	2,337,740	1,613,981	165,105	1,302,750	1,231,800	1,510,000
Trumbull	2,915,942	2,427,010	3,583,860	2,802,490	2,635,404	2,567,170
Tuscarawas	1,209,200	1,054,430	1,117,375	755,485	666,055	729,325
Union	62,900	84,050	153,900	339,600	69,700	211,800
Van Wert	1,600	....	600	1,000	2,000	4,400
Vinton	1,407,600	1,294,950	1,589,939	1,152,383	1,178,276	1,021,900
Warren	562,750	392,150	837,200	653,300	706,050	937,112
Washington	3,375,175	3,294,850	4,260,500	3,025,166	2,861,420	2,399,180
Wayne	3,560,698	3,152,538	4,128,876	2,752,086	2,974,750	3,053,980
Williams	63,300	116,700	235,340	52,200	36,350	61,950
Wood	453,400	319,300	333,380	525,700	234,560	385,200
Wyandot	217,516	153,700	348,480	180,000	128,200	135,000
Total pounds	123,146,474	102,383,910	126,297,999	91,290,340	88,279,477	94,488,045
Total cost	$1,481,583 05	$1,168,657 00	$1,529,088 00	$1,162,981 00	$1,180,448 00	$1,229,676 00

Average number of pounds for 6 years 104,314,374.
Average cost for 6 years $1,292,072.18.

COMPARATIVE TABLE SHOWING PRODUCTION OF WOOL IN OHIO FOR EIGHT YEARS.

Counties.	Pounds shorn.							
	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Adams	39,621	37,878	60,870	65,518	60,442	61,786	58,525	49,800
Allen	77,012	76,141	93,728	130,117	130,849	127,609	118,725	99,352
Ashland	169,597	203,188	189,455	218,256	231,198	277,685	283,416	282,198
Ashtabula	90,381	77,075	11,799	109,793	120,659	120,209	138,622	117,273
Athens	196,726	215,524	292,028	361,205	371,618	447,861	448,202	541,673
Auglaize	49,405	53,662	68,827	85,365	65,622	71,629	63,337	48,503
Belmont	348,934	359,787	452,450	553,076	556,100	648,155	660,028	603,022
Brown	49,705	41,270	58,635	59,686	51,855	48,817	44,119	32,448
Butler	25,832	25,615	37,997	40,128	46,805	38,027	32,327	39,014
Carroll	326,937	314,263	380,926	466,152	474,380	552,210	557,814	516,725
Champaign	128,211	104,085	194,617	171,499	175,776	142,139	131,473	121,400
Clark	120,487	142,509	205,945	202,824	257,072	290,786	268,108	225,169
Clermont	25,554	24,811	27,456	31,110	25,183	21,087	33,892	14,650
Clinton	97,317	115,515	4,615	154,632	143,152	130,413	128,366	104,466
Columbiana	155,007	170,504	201,560	235,916	280,574	334,511	384,818	364,711
Coshocton	404,367	463,164	533,410	580,978	636,198	646,764	669,280	608,798
Crawford	199,646	201,365	220,954	223,891	230,871	248,263	271,536	242,700
Cuyahoga	29,773	27,188	31,680	34,233	43,295	50,098	48,876	52,520
Darke	28,031	24,013	36,032	49,762	40,375	42,720	27,626	25,524
Defiance	62,783	71,401	72,826	81,042	76,812	68,614	71,698	62,550
Delaware	186,144	210,081	262,103	323,385	245,081	400,871	401,939	403,887
Erie	59,675	65,514	75,952	75,379	102,522	104,670	130,738	147,512
Fairfield	56,350	58,098	81,434	132,584	144,003	109,837	160,193	150,955
Fayette	49,655	44,315	69,980	81,906	106,328	85,188	71,728	83,216
Franklin	46,748	44,271	54,448	55,828	66,803	79,084	72,306	77,548
Fulton	110,902	96,385	96,278	154,899	186,085	194,930	202,507	151,064
Gallia	76,464	61,945	74,951	90,473	86,914	87,569	77,028	75,416
Geauga	71,056	66,335	73,155	95,647	89,524	97,736	96,163	91,014
Greene	99,616	91,028	131,087	136,163	94,759	144,737	122,263	141,972
Guernsey	355,240	378,170	439,496	540,090	568,605	642,249	646,077	628,343
Hamilton	6,272	....	6,938	8,727	11,949	11,706	10,239	10,098
Hancock	171,988	155,955	201,755	219,393	224,107	231,039	249,301	213,701
Hardin	45,158	154,248	173,476	210,119	169,343	212,230	225,179	199,219
Harrison	562,095	539,373	676,295	812,750	814,892	912,442	874,018	870,246
Henry	41,028	36,505	52,332	96,426	59,769	64,663	56,457	65,409
Highland	84,205	87,176	114,380	126,252	118,008	101,814	93,597	80,205
Hocking	83,317	97,560	102,325	141,630	135,023	157,245	162,051	154,014
Holmes	118,686	148,219	148,645	183,859	189,520	198,379	228,399	205,235
Huron	284,424	275,803	297,408	334,188	343,096	404,463	417,970	355,308
Jackson	44,014	61,257	65,153	70,813	62,654	62,924	58,630	52,887
Jefferson	310,654	290,035	354,508	432,182	431,910	484,988	518,275	502,349
Knox	457,119	460,255	529,881	574,810	621,218	682,698	721,905	664,832
Lake	32,918	38,138	38,457	48,248	39,226	58,429	59,046	78,993
Lawrence	10,165	11,131	12,085	20,809	16,804	11,651	12,243	6,703
Licking	470,768	527,657	584,445	702,301	759,898	893,405	949,480	961,713
Logan	237,135	155,657	200,477	250,431	299,071	280,521	274,522	220,156
Lorain	115,431	125,062	126,229	159,756	157,368	199,888	197,912	192,045
Lucas	14,290	12,426	16,651	18,981	21,881	27,436	28,327	22,567
Madison	164,085	144,390	189,896	213,181	265,499	253,709	304,955	280,105
Mahoning	133,325	145,645	218,210	224,929	226,576	215,037	255,831	334,414
Marion	317,326	328,133	340,669	391,407	341,086	400,799	385,277	352,510
Medina	170,083	159,538	192,333	217,140	210,147	318,816	273,879	290,689
Meigs	132,118	137,653	216,315	239,055	213,029	248,028	258,507	229,017
Mercer	48,882	38,049	49,194	70,037	70,029	57,053	45,170	38,987
Miami	19,570	19,488	21,750	28,572	31,708	36,983	30,508	27,767
Monroe	70,686	71,673	108,718	155,480	179,735	184,675	188,016	165,376
Montgomery	11,713	7,916	13,033	19,060	22,675	16,272	19,418	13,846
Morgan	312,424	334,887	435,234	506,300	511,130	545,856	522,977	516,033
Morrow	341,632	322,291	368,913	452,859	472,037	549,181	548,073	522,771
Muskingum	441,585	472,490	540,753	567,953	588,831	640,590	595,996	613,623
Noble	232,378	243,588	343,803	424,738	384,021	475,456	484,336	404,405
Ottawa	27,160	27,860	33,038	36,344	38,143	68,725	49,506	46,678
Paulding	24,015	19,153	29,651	29,368	30,021	26,821	21,082	14,070
Perry	131,731	156,250	196,777	224,612	204,636	249,513	267,298	231,872
Pickaway	38,315	45,628	71,549	....	77	47,791	44,372	53,344
Pike	21,761	22,435	27,616	32,038	28,840	23,034	24,383	19,463
Portage	118,615	120,350	155,640	182,617	178,005	223,077	222,695	200,041
Preble	31,584	33,159	35,359	44,431	39,167	42,335	35,342	29,421
Putnam	49,363	34,845	55,330	61,903	56,546	79,307	90,578	45,808
Richland	164,947	163,781	215,003	230,000	251,568	282,856	239,520	260,131
Ross	53,111	46,679	68,542	63,811	68,282	73,696	75,040	56,928

COMPARATIVE TABLE SHOWING PRODUCTION OF WOOL IN OHIO FOR EIGHT YEARS — Concluded.

Counties.	Pounds shorn.							
	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Sandusky ..	85,016	65,936	105,756	117,395	84,235	107,390	136,646	153,142
Scioto	5,508	6,297	8,654	7,776	5,652	5,847	10,504	6,861
Seneca	145,419	162,462	204,117	202,496	211,600	238,177	246,735	264,629
Shelby	29,130	28,905	47,185	33,822	39,311	35,109	35,717	31,452
Stark	112,335	130,354	158,771	194,159	185,899	207,773	205,608	175,905
Summit	44,759	41,179	59,435	65,306	66,760	78,970	75,382	78,338
Trumbull ..	135,160	140,458	179,270	211,540	212,160	241,348	239,282	241,922
Tuscarawas.	142,789	151,606	202,810	262,672	272,365	316,990	298,704	309,099
Union	194,238	190,750	234,934	273,134	315,100	283,322	338,504	262,752
Van Wert ..	50,665	43,495	74,037	56,585	62,104	56,653	48,155	56,514
Vinton	98,716	110,548	136,158	150,964	38,360	145,997	149,013	163,175
Warren	59,385	61,164	69,788	68,108	82,132	69,874	63,193	49,683
Washington.	183,583	296,001	267,207	349,428	327,404	362,268	392,812	375,170
Wayne	116,191	107,401	136,397	153,415	155,215	170,601	156,608	155,551
Williams ..	136,522	135,849	149,616	162,474	164,650	188,565	176,524	166,137
Wood	102,511	84,074	97,599	86,055	117,609	120,894	120,066	123,156
Wyandot ...	352,924	368,432	375,920	406,395	346,650	412,110	402,432	409,697
Total prod.	11,877,503	12,262,439	14,671,104	17,161,826	17,284,073	19,405,224	19,635,824	18,629,961

Average product for 8 years 16,365,994 pounds.

TABLE SHOWING THE NUMBER OF HORSES IN OHIO FOR NINE YEARS.

Counties.	1898.	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Adams	4,426	4,670	4,927	5,011	5,705	5,649	5,701	6,081	6,091
Allen	8,397	8,894	9,174	9,193	9,231	9,651	10,022	10,006	9,539
Ashland	7,009	6,698	7,045	7,784	8,144	8,552	8,885	8,590	9,110
Ashtabula	9,838	10,424	10,960	11,132	11,576	11,598	12,008	12,208	12,131
Athens	4,637	4,918	5,063	5,349	5,736	6,290	5 874	5,411	5,271
Auglaize	8,101	8,648	8,883	9,171	9,093	9,391	9,425	9,616	9,156
Belmont	8,480	8,755	9,239	10,249	11,002	11,550	11,365	11,107	11,305
Brown	6,567	7,214	7,014	7,313	7,821	8,505	8,576	8,486	8,986
Butler	10,677	10,841	11,349	11,837	12,274	11,968	11,908	11,953	11,803
Carroll	4,599	4,732	5,189	5,833	6,350	6,692	6,782	6.497	6,123
Champaign	10,080	10,512	11,301	11,809	12,141	12,405	12,276	11,989	11,694
Clark	11,371	11,709	11,661	11,392	12,476	12,208	11,896	11,313	11,644
Clermont	6 676	7,351	7,292	7,667	8,447	8,725	8,509	8,691	8,389
Clinton	9,002	9,576	9,773	10,480	11,074	11,091	10,862	10,564	10 919
Columbiana	9,503	9,494	9,567	9,854	10,260	10,882	11.029	11,129	11,172
Coshocton	6,904	7,018	7,524	7,391	8,122	8,433	8,533	8,239	7,965
Crawford	8,537	8.374	8,406	8,631	8,595	8,743	9,349	9,536	9,209
Cuyahoga	18,624	19,443	19,931	18,833	19.636	19,925	19,527	20,105	19,272
Darke	14.590	14,373	15,061	15,700	15,631	15,760	15.598	15,156	17,742
Defiance	6,460	6,559	6,671	6,748	7,385	7,313	7,627	7,315	6,098
Delaware	7,194	7,578	8,400	9,161	10,059	9,965	10,252	10,870	11,065
Erie	5,385	5,553	5,600	5,994	6,104	6,115	6,215	6,126	6,200
Fairfield	10,117	9,562	9,807	10,533	10,654	10,714	10,665	10,354	10,533
Fayette	9,120	9,600	9,763	11,143	11.171	11,149	10,710	10,512	10,752
Franklin	14,697	15,551	15,862	18,136	17,667	18,689	20,064	17,981	17,995
Fulton	7,013	6,562	7,376	7,653	7,816	8,929	8,963	8,947	8,716
Gallia	4,682	4,968	5,315	5,673	5,741	5,904	6,088	5,900	6,499
Geauga	5,351	5,707	5,821	5,780	6,032	6,168	6,689	6,665	6,618
Greene	10,229	10,532	10,918	11,510	11,730	11,736	12,184	11,706	11,563
Guernsey	5,676	6,390	6,079	6,911	6,671	6,967	7,281	7,050	7,556
Hamilton	18,169	18,782	19,527	20,330	20,656	21,046	20,334	20,406	19,648
Hancock	10,544	10,612	10,913	11,405	12,179	12,134	12,869	12,218	12,312
Hardin	7,361	7,646	8,177	8,457	8,861	8.901	8,864	9,244	9,459
Harrison	4,798	4,943	5.274	5,780	6,418	6,974	7,184	6,829	7,164
Henry	6,481	6,683	6,891	7,167	7,312	6,708	8,017	7,306	7,653
Highland	8,284	8,518	9,252	9,298	10,088	10,132	10,079	10,157	10,754
Hocking	3,404	3,743	4,046	3,980	4,193	4,019	3,886	3,913	4,103

Holmes	6,491	6,303	6,408	6,972	7,428	8,035	8,095	8,349	7,862
Huron	8,171	8,278	8,460	8,870	9,090	9,518	9,630	9,603	9,515
Jackson	3,549	3,609	3,692	3,868	4,026	3,860	3,679	3,761	4,177
Jefferson	6,097	6,307	6,212	6,813	7,231	7,388	7,567	7,330	7,253
Knox	7,730	8,059	8,592	9,243	9,722	10,314	10,321	10,327	10,477
Lake	4,262	4,560	4,614	4,899	4,969	4,656	5,038	4,742	4,615
Lawrence	3,586	3,668	3,685	4,301	4,142	4,187	3,951	4,342	4,471
Licking	12,571	12,825	13,915	14,037	14,538	14,336	14,055	13,907	14,267
Logan	8,695	8,711	9,115	10,085	10,040	10,089	10,467	10,106	10,952
Lorain	9,099	9,521	8,699	10,268	10,727	11,137	11,505	11,332	11,188
Lucas	9,329	9,202	8,826	8,906	9,024	9,292	9,417	9,213	8,521
Madison	9,266	9,671	10,392	10.652	10,548	10,847	10,172	9,799	10,118
Mahoning	8,493	8,963	9,029	9,532	9,725	9,777	9,539	10,522	10,416
Marion	7,534	7,543	8.142	8,621	9,117	8,812	9,172	9,147	8,979
Medina	8,000	8,086	8,326	8,971	9,312	9,748	10,066	10,111	10,366
Meigs	5,345	5,407	5,679	5,955	6,323	6,330	5,889	5,847	5,966
Mercer	8,278	8,246	8,295	9.061	9,393	9,444	9,718	10.287	9,777
Miami	11,450	11,217	11,289	11,999	12,207	12,356	12,201	11.907	11,585
Monroe	4,965	5,171	5,965	5,777	6,341	6,262	6,801	6.110	7,060
Montgomery	16,757	15,797	16,143	16,833	17,264	17,333	15,904	16.650	16,841
Morgan	4,920	5,087	5,571	6,282	6,756	7,169	7,208	6,722	7.137
Morrow	7,200	7,342	7,561	8,412	8,485	8,826	9,071	9,101	8,712
Muskingum	9,739	10,075	10,627	11,034	11,594	12,226	11,961	11,050	11,880
Noble	4,183	4,532	4,626	5,220	6,452	5,860	5,840	5,725	6,210
Ottawa	5,255	5,333	5,428	5,493	5,504	5,953	6,042	6,055	5,829
Paulding	4,286	4,826	4,640	4,780	5,253	5,604	5,938	6,074	6,351
Perry	5,660	5,973	6,301	6,712	6,703	6,687	6,658	6,312	6,550
Pickaway	9,972	10,283	10,502	10,754	11,314	11,228	11,442	11,553	11,537
Pike	4,029	4.161	4,317	4,651	4,561	4,520	4,356	4,497	4,535
Portage	7,961	8,264	8,444	8,930	9,052	9,500	9,551	10,078	10,282
Preble	9,072	9,498	9,518	9,932	10.140	10,465	10,340	9,916	10,284
Putnam	8,433	8,566	8,821	9,141	9,115	9,538	8.884	9,138	10,286
Richland	8,671	8,715	9,030	9,474	9,991	10,097	10,678	10,543	10,969
Ross	10,934	11,347	12,152	12.730	12,722	12,641	12,409	12,113	12,484
Sandusky	8,325	8,292	9.182	9,008	9,518	9,145	9,385	9,564	9.457
Scioto	5,153	5,227	5,312	5,395	5,539	5.112	5,011	4,880	4,863
Seneca	9,083	9,505	9,386	10,068	10,477	10,611	10,706	11,662	11,510
Shelby	8,467	8.371	8,610	8.901	9,045	9,550	9,606	9,517	9,605
Stark	14,218	14,728	15,443	15,575	15,736	15,798	15 859	15,886	15,189
Summit	9,247	9,444	9,523	9,905	9,995	10,607	10,851	10,877	10,697
Trumbull	10,659	11.247	11,941	12,003	12,761	12,701	13,044	12,653	12,277
Tuscarawas	7,872	7,945	8,483	8,950	8,847	9,266	9,963	9,896	10,403
Union	7,408	7,546	7,704	8,557	8.915	9,276	9,953	9,865	10,235

TABLE SHOWING THE NUMBER OF HORSES IN OHIO FOR NINE YEARS.— Concluded.

Counties.	1898.	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Van Wert	8,571	8,370	8,901	8,962	9,383	9,697	9,818	9,555	9,732
Vinton	2,632	2,659	2,814	2,948	3,023	3,206	2,766	2,989	3,035
Warren	9,209	9,464	9,742	10,285	10,549	11,339	11,025	10,634	10,518
Washington	7,839	7,749	8,110	8,135	8,724	8,603	8,343	8,411	8,624
Wayne	11,115	11,165	11,217	11,685	12,233	12,812	12,974	12,932	12,583
Williams	6,277	6,192	6,672	7,346	7,629	8,191	8,628	9,035	9,063
Wood	11,731	11,640	11,159	11,107	11,514	12,349	12,361	11,955	11,929
Wyandot	6,962	7,227	7,216	7,641	8,092	8,330	8,499	8,741	9,320
Totals	717,734	735,050	759,482	795,967	824,840	842,209	848,443	841,797	846,789

TABLE SHOWING THE NUMBER OF CATTLE IN OHIO FOR NINE YEARS.

Counties.	1898.	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Adams	9,114	7,852	8,354	8,575	7,506	10,280	11,037	11,611	13,197
Allen	13,224	12,345	12,151	12,779	12,358	12,540	14,123	14,736	15,155
Ashland	13,392	11,942	12,317	13,124	13,450	14,218	15,326	15,452	16,223
Ashtabnla	26,726	23,961	23,855	24,386	24,704	25,783	28,420	28,225	18,409
Athens	11,218	9,761	9,175	10,836	13,078	14,574	14,579	13,536	13,504
Anglaize	13,224	12,692	13,265	14,705	13,920	13,874	14,872	15,004	16,341
Belmont	19,127	17,429	17,055	19,871	20,597	21,661	22,083	21,985	22,840
Brown	10,784	10,843	10,617	10,679	11,534	11,428	11,848	11,727	13,093
Butler	13,711	13,096	12,842	14,030	14,371	14,512	15,548	15,958	16,711
Carroll	11,814	10,961	11,067	12,226	13,433	14,326	14,778	14,782	14,069
Champaign	14,958	14,058	13,955	15,714	15,423	15,451	15,726	15,943	17,108
Clark	15,789	14,758	14,729	14,493	16,509	16,193	16,661	15,091	16,360
Clermont	9,081	8,950	9,624	10,310	11,097	11,000	10,855	11,999	12,642
Clinton	13,386	12,010	12,538	12,906	13,146	13,943	14,756	12,620	13,373
Columbiana	19,456	18,243	17,705	18,234	18,553	19,060	20,518	20,667	20,534
Coshocton	15,823	13,952	14,376	14,519	15,103	17,380	19,162	18,350	17,955
Crawford	15,229	14,370	14,353	14,592	14,349	13,747	15,065	16,641	16,785
Cnyahoga	15,768	15,642	15,293	15,571	15,635	16,225	16,965	19,670	19,428
Darke	20,591	19,041	19,694	20,837	21,125	21,953	22,313	22,078	24,199
Defiance	9,485	9,299	9,782	8,481	8,154	9,308	10,441	11,186	13,426
Delaware	15,766	13,710	13,283	14,429	14,779	14,994	15,155	16,016	16,718
Erie	7,223	7,057	6,800	6,980	6,152	7,071	7,581	7,857	8,275
Fairfield	17,210	16,400	16,793	19,073	19,811	19,698	20,716	20,446	21,607
Fayette	16,931	15,298	13,502	16,143	16,149	16,974	15,776	15,010	16,432
Franklin	17,587	17,459	16,972	19,846	19,414	19,932	22,119	21,328	23,276
Fulton	12,603	11,029	12,548	12,855	12,773	13,071	13,844	14,326	15,858
Gallia	10,328	8,812	9,237	10,324	11,201	12,156	13,027	13,199	14,979
Geanga	18,898	17,103	16,067	17,243	17,077	16,889	18,168	18,372	18,955
Greene	14,804	13,926	14,508	15,027	15,974	15,553	15,219	15,302	16,356
Guernsey	13,737	12,938	11,919	14,553	14,514	15,716	16,260	15,166	16,144
Hamilton	17,665	18,421	18,595	19,883	20,007	20,693	20,837	21,913	22,277
Hancock	19,716	18,429	18,689	19,086	18,917	18,607	19,648	20,293	22,395
Hardin	13,793	12,629	12,067	12,352	12,543	13,579	14,557	15,643	16,939
Harrison	11,497	10,642	9,944	11,335	12,225	12,673	13,119	12,962	13,040
Henry	11,191	11,388	11,380	17,712	10,926	10,092	12,449	12,029	13,995
Highland	15,639	14,401	14,514	16,282	16,261	18,401	19,734	18,843	19,969
Hocking	7,878	7,757	8,192	8,821	9,845	9,724	10,081	9,893	10,705

TABLE SHOWING THE NUMBER OF CATTLE IN OHIO FOR NINE YEARS.—Concluded.

Counties.	1898.	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Holmes	15,455	13,234	13,980	16,767	16,855	17,909	18,672	16,834	16,080
Huron	13,026	12,063	12,435	12,648	12,343	13,673	15,004	15,902	16,327
Jackson	9,282	8,672	8,871	9,603	10,259	11,142	11,902	12,591	14,336
Jefferson	11,450	10,479	9,815	11,133	12,705	12,832	13,991	14,137	14,017
Knox	15,862	14,648	14,363	16,303	16,064	17,153	17,658	18,905	18,590
Lake	6,444	6,015	6,026	6,006	6,069	6,425	7,112	6,960	8,110
Lawrence	7,642	7,120	6,544	7,665	8,634	9,411	10,370	12,431	12,476
Licking	22,868	21,233	22,356	23,948	25,059	26.148	26,171	25,947	26,031
Logan	15,205	12,781	13,324	14,711	13,942	14,531	15,472	15,456	16,710
Lorain	20,138	20,262	19,107	10,182	15,996	20,779	23,694	24,969	15,582
Lucas	8,189	7,819	7,813	7,665	7,546	8,013	9,445	8,841	10,347
Madison	24,308	16,448	15,490	18,918	18,379	17,854	19,080	17.672	19,988
Mahoning	15,942	14,858	14,501	15,301	17,238	16,371	17,741	18,010	17,612
Marion	13,264	12,243	11,779	12,152	12,054	12,264	13,539	13,653	14,532
Medina	15,631	14,871	15,240	15,749	15,417	16,039	16,960	17,030	17,668
Meigs	10,280	9,159	8,912	10,893	12,021	11,588	13,399	19,173	13,168
Mercer	14,343	13,455	14,025	14,812	15,777	15,184	16,243	17,891	19,076
Miami	12,961	12,120	12,455	13,405	13,805	13,983	14,066	13,794	14,570
Monroe	11,866	10,440	9,786	12,843	13,935	14,964	16,409	14,802	17,764
Montgomery	18,376	16,048	17,048	18,618	18,567	18,274	16,895	18,141	20,011
Morgan	12,371	11,813	11,128	12,878	14,029	15,598	16,445	14,926	15,396
Morrow	13,285	11,782	11,562	12,434	11,965	12,436	13,409	13,122	13,481
Muskingum	22,494	22,069	21,363	23,786	25,151	26,108	26,099	24,473	25,792
Noble	12,613	11,436	10,400	12,774	13,303	14,717	15,083	14,839	16,797
Ottawa	7,491	7,396	7,634	7,669	17,598	7,904	8,525	9,011	10,292
Paulding	4,901	5,016	5,345	4,956	5,477	5,951	7,185	8,217	11,347
Perry	13,039	11,870	12.399	13,987	14,892	14,842	15,635	14,846	14,770
Pickaway	18,244	17,210	17,737	20,047	19,803	19,853	20,459	19,448	20,561
Pike	4,849	4,595	5,131	5,499	6,268	7,220	7,357	7,538	8,314
Portage	19,532	18,076	17,033	19,654	19,851	20,176	20,928	21,324	21,855
Preble	14,072	13,199	13,330	12,805	14,374	15,165	15,122	14.373	16,959
Putnam	14,354	13,267	13,531	13,221	13,804	14,202	15,750	15,428	18,374
Richland	15,039	13,291	13,903	14,863	14,974	15,362	16,728	16,882	17,980
Ross	17,482	16,918	16,916	18,972	19,285	19,599	20,721	20,582	20,625
Sandusky	12,977	11,205	12,386	12,807	12,897	12,526	13,943	14,364	15,998
Scioto	7,624	7,678	7,995	8.227	8,693	9,549	10,209	10,881	12,161

Seneca	14,215	15,100	15,483	16,052	15,327	15,390	17,293	18,407	19,411
Shelby	13,331	13,195	14,159	14,018	13,984	14,687	14,838	15,342	15,772
Stark	25,383	24,048	24,692	24,989	26,061	27,105	28,536	28,369	28,209
Summit	19,287	17,644	16,848	17,426	17,516	18,962	20,495	20,452	20,779
Trumbull	29,374	26,897	26,089	26,594	27,051	28,635	30,978	30,562	30,917
Tuscarawas	19,579	18,796	19,277	20,344	20,278	21,872	24,150	23,938	23,979
Union	12,540	11,182	11,069	12,953	12,754	13,142	14,178	13,818	15,174
Van Wert	10,684	9,413	10,522	10,919	10,852	11,253	12,824	14,080	15,881
Vinton	5,766	5,350	5,475	6,242	6,832	8,251	8,635	8,359	8,909
Warren	12,194	11,569	11,537	12,129	12,380	12,883	13,375	13,050	13,802
Washington	15,884	13,772	13,798	15,509	17,784	18,729	18,728	18,529	19,461
Wayne	22,730	20,615	20,720	21,435	21,392	22,714	24,760	23,791	24,556
Williams	11,259	10,122	11,009	11,020	10,845	11,032	12,165	12,888	14,629
Wood	14,730	15,807	14,974	15,788	15,473	15,328	16,820	17,258	18,873
Wyandot	11,440	11,191	10,403	10,757	10,534	10,562	11,513	13,081	13,606
Totals	1,265,664	1,174,094	1,175,475	1,252,888	1,296,105	1,339,569	1,420,105	1,431,179	1,486,881

TABLE SHOWING THE NUMBER OF MULES IN OHIO FOR NINE YEARS.

Counties.	1898.	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Adams	189	189	228	218	246	233	223	266	264
Allen	98	103	98	139	133	138	175	194	214
Ashland	54	56	58	78	83	94	92	99	104
Ashtabula	41	42	43	53	52	47	52	46	41
Athens	170	165	177	190	219	213	190	299	335
Auglaize	148	171	175	207	231	263	289	318	356
Belmont	370	375	386	382	383	419	404	417	395
Brown	213	210	238	291	325	299	287	294	288
Butler	453	482	537	649	823	882	792	835	952
Carroll	62	73	75	96	77	119	118	137	121
Champaign	143	153	164	175	175	187	165	173	188
Clark	299	211	213	207	217	262	270	294	287
Clermont	569	604	645	679	733	790	807	1,051	901
Clinton	322	328	354	362	340	332	296	309	336
Columbiana	85	77	87	128	191	230	198	199	213
Coshocton	111	103	110	110	143	139	181	183	222
Crawford	79	67	86	91	138	112	137	142	150
Cuyahoga	114	85	129	104	124	172	197	245	229
Darke	317	344	403	409	407	474	501	534	579
Defiance	75	82	87	96	107	141	138	135	136
Delaware	55	55	63	60	86	175	97	106	120
Erie	22	17	26	21	25	30	31	33	124
Fairfield	134	129	120	143	145	161	140	148	173
Fayette	152	179	198	260	224	200	198	240	274
Franklin	131	121	131	147	198	243	235	308	329
Fulton	24	18	30	40	45	52	56	81	90
Gallia	234	264	246	281	273	237	224	217	281
Geauga	32	39	55	48	52	33	37	32	37
Greene	173	191	191	240	226	207	228	217	263
Guernsey	219	240	191	183	154	161	143	135	163
Hamilton	1,271	1,359	1,448	1,572	1,899	2,107	2,069	2,465	2,332
Hancock	99	94	105	121	132	162	161	199	235
Hardin	101	129	155	161	200	210	189	266	239
Harrison	54	49	42	43	36	48	44	62	71
Henry	67	72	77	101	111	123	139	141	199
Highland	207	235	265	291	295	274	251	213	245
Hocking	53	61	87	85	119	117	143	151	158

Holmes	73	86	96	103	110	144	125	139	163
Huron	95	92	87	84	73	92	110	119	105
Jackson	830	795	808	784	782	762	639	577	548
Jefferson	195	188	180	196	213	225	222	207	211
Knox	115	110	111	117	121	162	153	141	142
Lake	13	15	26	30	43	42	51	44	48
Lawrence	494	515	545	635	656	606	564	653	684
Licking	100	116	126	115	145	161	160	195	210
Logan	84	71	72	103	95	110	137	140	182
Lorain	76	41	33	47	42	43	59	55	39
Lucas	137	144	118	125	134	142	186	176	174
Madison	254	234	239	268	284	308	286	264	280
Mahoning	104	75	86	98	83	128	144	174	142
Marion	114	131	124	143	141	152	177	180	226
Medina	125	116	137	236	142	133	130	143	174
Meigs	222	258	289	284	288	321	310	347	390
Mercer	132	122	143	162	171	203	222	247	262
Miami	234	242	240	280	309	324	324	322	351
Monroe	88	77	62	73	93	105	99	106	150
Montgomery	227	240	255	265	316	323	320	373	390
Morgan	52	49	52	53	66	81	84	101	120
Morrow	62	54	50	57	74	64	73	88	90
Muskingum	171	162	201	222	229	275	278	289	338
Noble	57	45	44	52	44	56	51	63	119
Ottawa	14	10	20	27	13	15	30	34	42
Paulding	41	42	50	54	80	120	147	192	176
Perry	100	116	115	124	123	163	133	146	169
Pickaway	280	273	287	301	304	312	329	328	364
Pike	203	207	253	246	267	303	308	370	379
Portage	91	97	93	70	83	61	69	73	76
Preble	255	237	240	228	229	228	273	250	284
Putnam	50	78	74	94	106	156	150	173	238
Richland	142	147	151	177	195	213	233	244	294
Ross	149	203	182	236	220	195	238	304	305
Sandusky	53	60	78	80	87	107	110	123	153
Scioto	631	774	787	842	912	873	890	863	946
Seneca	63	89	90	104	88	114	112	148	147
Shelby	89	98	110	124	131	135	142	171	193
Stark	327	319	356	372	400	447	403	380	445
Summit	88	94	72	90	89	121	123	129	113
Trumbull	98	57	65	68	59	89	101	104	103
Tuscarawas	113	130	125	130	142	156	195	197	215
Union	36	31	49	62	66	140	77	85	100

TABLE SHOWING THE NUMBER OF MULES IN OHIO FOR NINE YEARS.—Concluded.

Counties.	1898.	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Van Wert	152	141	178	167	195	221	220	247	280
Vinton	106	117	146	144	178	193	187	223	241
Warren	389	383	407	475	505	505	594	604	573
Washington	171	164	183	192	188	186	233	221	250
Wayne	182	182	171	155	162	179	193	211	215
Williams	57	65	68	83	95	99	115	120	142
Wood	101	130	130	241	155	196	196	206	245
Wyandot	55	51	71	63	88	101	106	131	166
Totals	15,030	15,445	16,398	17,942	19,181	20,676	20,663	22,754	23,936

TABLE SHOWING THE NUMBER OF SHEEP IN OHIO FOR NINE YEARS.

Counties.	1898.	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Adams	7,997	7,421	8,533	11,420	14,311	13,601	13.974	12,894	11,742
Allen	17,705	14,365	16,676	22,681	28,634	28,097	28,492	24,908	24,124
Ashland	32.885	27,790	28,266	36,075	43,368	47,689	53,168	51,607	52,337
Ashtabula	18,374	17,797	20,201	25,228	29,557	29,987	33,191	30,927	29.070
Athens	40,478	33,264	34,310	40,861	61,550	65,511	77,293	75,558	72,219
Auglaize	9,568	8,580	10,907	13,743	16,008	16,492	15,762	13,641	11,871
Belmont	72,991	60,908	62,292	89,370	107,751	117,548	123,108	124,070	115,111
Brown	12,225	9,579	9,611	11,910	13,249	12,825	11,396	9,613	8,377
Butler	7,482	5,745	7,721	10,252	12,202	11,845	11,070	9,867	7,285
Carroll	60,888	53,090	58,566	78,584	100,338	101,269	107,726	106,412	103,116
Champaign	23,873	23,322	21,431	31,666	32,268	37,395	30,743	29,729	26,771
Clark	27,449	26,699	27,624	28,653	43,572	48,733	46,990	44.595	46,911
Clermont	6,647	5,629	7,208	8,193	8,572	7,668	6,753	5,998	5,414
Clinton	25,474	19,615	23,751	28,848	32,537	34,284	30,028	27,543	24,159
Columbiana	36,705	30,962	33,974	43,214	55,475	62,745	73,718	78,630	74,238
Coshocton	78,952	71,824	75,820	94,376	110,135	114,600	118,852	117,590	103,452
Crawford	42,534	36,786	41,043	53,811	52,029	50,824	51,972	54,006	49,839
Cuyahoga	6,757	6,055	6,348	7,976	9,353	10,758	12,472	12,941	12,801
Darke	6,870	5,219	5,793	8,350	10,537	10,730	8,804	6,329	5,487
Defiance	13,056	10,926	12,063	14,064	15,131	15,871	16,083	15,002	14,197
Delaware	42,646	39,259	41,644	53,635	65,297	73,396	82,267	79,392	79,089
Erie	12,575	11,343	12,890	16,085	20,792	20,518	25,189	24,540	23,823
Fairfield	16,736	12,714	13,993	21,589	26,935	29,472	28,244	28,810	24,806
Fayette	13,117	11,285	13,498	20,952	23,212	27,865	23,295	21,974	18,726
Franklin	11,042	10,221	10,838	15,771	18,449	20,093	21,265	20,165	20,023
Fulton	20,278	19,490	20,473	24,754	33,618	34,848	37,665	35,334	32,864
Gallia	14,788	13,710	13,946	20,024	22,751	22,871	20,659	17,166	14,625
Geauga	14,956	14,508	14,709	18,257	22,438	23,337	25,177	23,327	21,910
Greene	16,860	14,547	18,342	22,953	24,819	28,711	22,794	20,208	21,066
Guernsey	69,769	60,533	63,368	88,459	102,831	106,224	116,842	112,171	111.961
Hamilton	2,188	2,033	2,620	3,289	3,657	3,694	3,395	3,138	2,543
Hancock	33,086	30,595	33,887	41,912	48,575	47,795	52,810	49,415	48,196
Hardin	32,848	27,339	30,873	43,532	46,782	46,435	49,648	51,053	46.944
Harrison	100,162	89,339	92,134	121,599	140,840	145,472	159,246	153,587	145,881
Henry	8,787	7,438	8,318	10,914	14,174	14.326	14,971	13,061	11,927
Highland	21,075	17,770	18,693	23,300	27,510	27,499	25,697	20,616	16,636
Hocking	15,673	14,018	17,769	23,392	28,436	27,766	30,524	30,639	31,322

TABLE SHOWING THE NUMBER OF SHEEP IN OHIO FOR NINE YEARS.—Concluded.

Counties.	1898.	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Holmes	27,926	23,737	25,198	34,027	41,146	42,987	44,603	45,852	41.250
Huron	53,508	46,985	46,321	54,170	60,977	66,151	71,020	74,044	66,042
Jackson	8,955	9,031	11,827	14,769	15,363	14,857	14,325	13,809	12,573
Jefferson	56,636	49,064	46,273	65,203	82,985	81,368	89,194	93,962	91,490
Knox	84,764	73,681	76,411	103,200	117,246	128,747	133,347	129,994	118,035
Lake	7,377	6,795	7,914	9,690	12,415	14,115	15,511	15,822	16,771
Lawrence	3,128	3,257	3,619	5,031	5,856	5,846	5,483	4,974	4,201
Licking	92,214	81,652	92,243	115,620	137,018	147,391	157,019	158,765	161,877
Logan	31.371	30,074	34,237	44,530	51,541	56,630	54,610	50,762	46,034
Lorain	24,447	21,677	25,019	30,668	36,711	39,432	43,487	42,111	37,315
Lucas	3,191	2,740	2,736	4,044	5,723	6,406	6,773	5,689	6,084
Madison	28,991	29,586	31,854	47,704	52,487	58,510	58,617	59,372	51,645
Mahoning	29,815	25,143	26,877	37,678	45,350	45,304	46,050	51,237	44,381
Marion	54,174	44,750	50,035	56,109	64,552	70,410	73,729	69,958	69,701
Medina	32,415	30,119	32,606	40,894	48,850	53,534	55,001	55,109	52,440
Meigs	28.357	25,956	27,775	38,698	45,853	43,938	48,306	45,681	43,037
Mercer	11,980	9,419	9,089	12.222	13,931	14,576	12,065	10,202	8,694
Miami	4,902	5,235	4,470	6,253	7,747	7,950	7,630	6,888	5,898
Monroe	16,441	12,536	14,230	25,833	35.320	36,808	39,136	35,469	37,178
Montgomery	3,128	2,685	3,535	5,194	6,043	6,639	4,567	4,004	3,900
Morgan	59,079	51,736	54.892	72,090	89,610	92,363	98,151	92,196	89,465
Morrow	60,362	53,120	54,854	72.902	84,894	90,392	97,310	95,045	95.349
Muskingum	83,589	75,336	82,945	105,392	120,122	125,656	129,360	122,952	120,823
Noble	45,822	41,233	40,047	61,070	75,938	75,258	80,546	76,787	73,610
Ottawa	5,148	4,822	6,014	7,977	9,641	13,388	11,570	11,729	11,106
Paulding	6,034	4,559	5,242	6,726	6,840	7,584	6,732	5,867	6,694
Perry	25,817	24,339	27,715	37,022	44,694	45,777	51,453	50,123	48,246
Pickaway	9,471	8,777	9,969	13,615	15,015	16,218	12,538	13,237	11,880
Pike	3,890	3,896	5,909	7,989	7,407	6,838	6,614	5,890	5,871
Portage	26,989	23,607	25,332	33,562	42,274	44,799	48,264	49,756	44,440
Preble	7,190	5,741	7,144	9,042	10,376	9,660	9,018	7,389	6,783
Putnam	10,384	8,759	10,230	13,133	15,130	15,721	15,037	14,239	12,445
Richland	39,912	32,842	34,266	47,051	54,017	57,122	60.048	59,243	55,372
Ross	12,277	11,220	11,387	17,885	20,312	21,098	20,775	18,568	14,412
Sandusky	19,095	14,014	16,783	20,375	24,817	26,377	25,043	27,610	25,680
Scioto	1,814	1,727	2,341	2,973	2,926	2,651	2,377	2,441	2,645

Seneca	32,726	30,827	32,004	39,655	43,258	46,362	49,810	52,611	48,270
Shelby	7,287	6,172	6,814	8,411	9,406	9,441	8,749	1,877	7,041
Stark	26,230	23,453	26,215	33,802	41,081	42,239	43,802	45,359	40,618
Summit	9,986	8,871	9,935	13,442	16,708	18,662	21,968	22,602	20,341
Trumbull	29,893	26,922	30,041	40,339	49,181	50,412	56,110	52,792	50,102
Tuscarawas	32,639	28,681	32,781	45,206	57,225	58,767	67,198	66,070	63,923
Union	43,616	36,150	37,395	53,698	56,814	60,277	63,792	58,905	57,783
Van Wert	13,338	9,273	10,595	13,045	14,667	14,900	13,901	12,190	11,705
Vinton	19,097	18,152	22,420	27,799	30,335	30,584	30,680	30,054	31,868
Warren	11,965	11,577	14,408	16,288	18,720	18,015	16,862	13,712	12,457
Washington	37,824	32,961	38,472	52,576	66.967	66,889	67,143	66,213	65,566
Wayne	25,571	21,573	22,823	29,808	35,124	35,897	36,177	36,647	31,802
Williams	24,466	21,521	22,376	26,689	30,746	32,818	33,523	36,073	33,118
Wood	17,586	19,478	20,374	24,816	30,752	31.917	30.190	29,136	24,592
Wyandot	56,245	56,475	59.162	68,026	75,078	81,064	80.813	82,925	81,094
Totals	2,404,558	2,123,624	2,293,686	3,004,636	3,555,182	3,729,542	3,887,610	3,796,695	3,594,800

TABLE SHOWING THE NUMBER OF HOGS IN OHIO FOR NINE YEARS.

Counties.	1898.	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Adams	14,202	10,908	11,600	10,591	9,362	9,491	9,495	13,125	14,075
Allen	26,638	20,352	25,017	21,937	20,661	17,658	19,243	26,638	29,772
Ashland	20,348	16,419	14,881	13,924	12,459	11,788	13,345	17,320	20,059
Ashtabula	5,072	5,547	5,993	5,475	4,209	3,723	4,254	4,948	6,804
Athens	4,900	4,715	4,360	4,525	4,277	4.036	3,687	5 033	6.709
Auglaize	28,210	22,982	22,524	22,433	20,287	17,647	18,018	24,494	28,796
Belmont	14,551	12,270	10,375	12,560	12,197	10,653	11,792	14,676	19,123
Brown	28,527	22,370	21,867	19,063	16,380	16,971	17.104	18,852	23,057
Butler	25,868	19,288	18,642	19,947	18,915	17,114	18,631	26,902	28,223
Carroll	10,142	10,139	8,316	9,423	8,514	8,221	8,299	10,818	11,696
Champaign	34,408	25,025	22,837	25,723	22,798	18'841	15,745	33,027	37,669
Clark	29.464	22.947	21,225	23,733	20,297	16,711	17,374	24,589	26,823
Clermont	20,921	16,521	14,597	13,094	13,062	13.091	12,230	14,971	20,276
Clinton	37,957	32,183	29,279	25,734	27,836	30,457	29,865	34.742	36,319
Columbiana	12,920	11,433	11,175	11,711	11,060	10,528	10,693	14,160	17,058
Coshocton	17,151	15.686	13,897	14,580	11.857	11,746	11,539	15,109	18,871
Crawford	34,786	32,509	27,992	25,244	21,542	18,359	20,304	28,380	31,773
Cuyahoga	2,627	2,662	3,160	2,728	2,417	1,775	1,953	3,439	4,543
Darke	42,210	34,423	33,085	31,446	27,923	24,717	25,298	31,506	39,437
Defiance	16,233	11,411	14,229	12,109	10,921	8,374	10,121	14,196	17,218
Delaware	26,111	21,128	18,517	20,199	15,773	13,077	14,953	20,665	25,642
Erie	8,205	8,023	8,471	7,498	6,784	5,400	6,104	8,727	9,954
Fairfield	41,284	30,043	26,493	28,287	28,392	25,183	26,409	30,307	38,492
Fayette	41,369	31,705	32,360	27,504	32,639	32,940	29,939	37,624	43,857
Franklin	29,743	22,639	22,814	26,376	23,596	21,050	23,643	30,405	36,434
Fulton	21,821	17,300	19,793	18,250	14,627	12,147	13,694	17,977	20,724
Gallia	9.020	7,480	7,678	7,548	6,938	6,887	7,543	8,555	12,984
Geauga	4,731	4,076	4,322	3,763	3,073	2,466	3,110	3,859	4,831
Greene	32,456	21,569	22,009	25,650	24,084	21,429	22,210	32,569	39,437
Guernsey	9,630	9,100	7,976	9,083	7,213	6,874	7,428	8,916	11,645
Hamilton	11.884	10,800	10,278	11,398	11,239	9,118	11,606	14,095	15,050
Hancock	43,340	30,747	31,991	34,148	77,830	25,924	26,723	33,522	42,845
Hardin	31,491	24,793	22,737	23,395	20,019	14,952	14,039	22,025	26,993
Harrison	7,741	7.148	6,180	6,778	6,633	6,301	6,559	8,150	9,952
Henry	17,240	16,778	15,928	18,015	15,268	10.707	13,105	13,931	20,207
Highland	37,277	29,757	31,145	28,711	25,315	26,547	23,603	26,519	30,639
Hocking	6,937	6,169	6,647	6,114	5,657	4,986	4,955	6,020	7,751

Holmes	22,716	20,343	16,146	18,294	16,586	15,540	15,760	21,005	23,660
Huron	15,701	13,629	12,358	12,015	9,923	8,280	9,100	14,373	16,239
Jackson	5,411	4,600	4,613	4,446	4,036	3,726	3,909	4,671	7,559
Jefferson	8,488	8,062	6,694	7,364	7,292	6,866	6,918	8,667	9,477
Knox	25,911	23,111	18,344	19,121	15,956	13,966	14,420	19,100	22,213
Lake	1,840	1,774	1,955	1,612	1,336	1,158	1,244	1,525	2,153
Lawrence	5,478	4,791	4,651	5,116	4,842	4,195	5,193	7,605	8,462
Licking	38,247	30,425	26,500	29,054	24,851	20,910	21,377	26.266	31 414
Logan	31,315	23,835	20,246	21,919	17,662	15,034	14,727	25,603	30,358
Lorain	8,955	7,893	8,128	8,372	6,695	5,597	6,856	9,505	11,526
Lucas	9,169	7,688	6,054	7,646	5,988	5,424	5,797	7,654	10,370
Madison	39,594	32,549	26,147	30,443	30,250	26,765	24,081	31,883	41,133
Mahoning	9,087	8,373	7,507	8,227	7,407	6,413	6,680	8,351	10,155
Marion	26,489	23,395	21,786	25,192	19,666	17,333	18,386	21,974	26,996
Medina	11,101	9,479	8,932	9,278	7,136	6,482	6,502	8,465	10,899
Meigs	5,882	5,205	4,795	5,584	4,766	4,395	5,312	6,389	8,136
Mercer	31,420	26,462	27,212	28,391	25,420	22,781	23,442	32,358	31,197
Miami	21,269	14,318	15,631	15,487	14,160	12,097	18,746	18,405	20,750
Monroe	7,119	6,605	5,344	6,480	6,443	6,439	7,358	7,807	12,015
Montgomery	23,871	17,230	20,618	20,873	19,402	15,972	16,236	21,916	25,482
Morgan	7,440	6,525	5,874	7,379	6,234	6,061	6,556	7,344	11.132
Morrow	18,806	16,357	13,457	12,942	10,203	9,052	10,289	13,017	15,551
Muskingum	16,037	14,817	13,390	14,379	13,148	11,776	11,681	13,211	18,378
Noble	10,191	8,684	7,417	8,047	7,467	6,986	7,306	9,296	13,388
Ottawa	10,917	10,492	9,335	9,759	8,942	7,246	8,292	10,094	20,178
Paulding	10,049	8,009	10,488	8,896	6,439	5,331	6,531	10,964	12,044
Perry	12,267	10,243	9,269	10,002	8,736	7,642	7,846	9.695	10.874
Pickaway	30.628	20,297	27,742	30,124	27,355	23,348	23,690	29,121	37.020
Pike	8,877	6,680	6.828	7,767	6,588	6,173	6,504	8,677	10,690
Portage	8,675	7,409	7,321	7,809	6,774	5,674	6,170	7,261	9,462
Preble	33,693	21.983	23,880	25,837	22,284	21.198	22,355	26,940	27,860
Putnam	35,755	31,582	33,347	33,019	26,880	22,488	23,997	25,264	38,101
Richland	25,656	21,619	20,097	19,459	17,584	15,248	16,931	21.251	26,348
Ross	36,408	21,579	24.892	27,029	26,076	22,680	24,107	29,708	36,583
Sandusky	23,559	22,255	22,233	22,245	20,258	16,248	19,340	26,136	32,148
Scioto	7,677	6,992	8,289	7,400	6,537	6,299	6,195	7,600	9,542
Seneca	40,672	34,654	33,435	31.313	27,654	21,615	25,069	33,048	35,258
Shelby	26,208	20,320	18.974	19,184	16,883	15,516	18,047	25,296	26,843
Stark	26,341	24,276	22,611	22,489	22,068	18,247	22.330	25,816	31.951
Summit	11,056	9,689	9,028	9,281	8,121	7,604	8,371	10,380	12,117
Trumbull	7,523	6,953	7,800	6,968	5,453	4,832	5,064	6,706	8,571
Tuscarawas	17,004	15,729	14,859	14,183	13,488	12,396	13,893	16,199	20,085
Union	28,953	21,977	21,239	22,949	20,669	20,587	20,452	29,889	34,013

TABLE SHOWING THE NUMBER OF HOGS IN OHIO FOR NINE YEARS — Concluded.

Counties.	1898.	1897.	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Van Wert	24,963	16,393	22,469	24,872	21,173	17,899	20.499	25,030	34,330
Vinton	3,324	3,324	3,254	2,930	2,393	2,617	2,441	3,462	4,267
Warren	28,459	18,649	16,526	20,165	18.611	17,861	20,587	26,035	25,940
Washington	9,808	7,838	7,739	8,767	8,301	8,295	8,457	10,034	13,218
Wayne	31,690	27,454	22,709	22,814	20,307	18,667	21,052	25,927	31,476
Williams	19,888	17,891	19.130	17,194	13,314	10,721	12,846	18,028	25,338
Wood	37,612	29.694	26,397	25,162	20,653	17,005	19.665	23,242	34,286
Wyandot	27,400	26,155	23,678	23,930	18,754	14,977	16,538	23.079	28,795
Totals	1,794,014	1,455,247	1,407,758	1,437,450	1,331,169	1,139,551	1,205,238	1,562,065	1,891,769

OHIO STATE FAIR

—AND—

INDUSTRIAL EXPOSITION.

Columbus, August 29, 30, 31, September 1, 2, 1898.

BULLETIN OF ENTRIES AND AWARDS.

The Forty-eighth Annual Ohio State Fair and Industrial Exposition has passed into history, and is recorded as one of the most complete and best arranged exhibitions of agriculture and the mechanic arts that has ever been held in the state. Every department and class was filled to overflowing by the best that is produced and all displayed in systematically arranged groups for intelligent study of the various branches of Ohio's productive industries.

The park grounds were in splendid condition, while all the buildings presented a new appearance by reason of having been repaired and repainted in bright attractive colors prior to the Fair. Visitors generally remarked upon the fine appearance of the grounds and the excellent appearance of the buildings, all of which made the exhibits more enjoyable.

The State Board of Agriculture labored earnestly and hard for a Fair and Exposition that should do credit to Ohio's greatness. The result of their labors has been highly satisfactory, as attested by the thousands of citizens from all parts of the state who visited the Fair during its progress. All left the grounds satisfied and having learned something of benefit from the thousands of object lessons placed before them.

This Bulletin contains a list of the entries and awards in the departments of live stock and the awards in all other competitive departments, as well as a list of exhibits where no competition was entered into, and also a complete report of the dairy tests, all of which is,

Respectfully submitted,

W. W. Miller,
Secretary.

J. W. Fleming,
Assistant Secretary.

ENTRIES AND AWARDS

IN

LIVE STOCK DEPARTMENTS.

HORSES—A. J. CLARK, Member in Charge.

THOROUGHBREDS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 4 years old and over.			
E. Hickey. Claylick, O.	King	First	$20 00
Stallion 3 years old and under 4.			
E. Hickey, Claylick, O.	Longfellow	First	20 00
Stallion 2 years old and under 3.			
G. W. O'Harra, Alton, O.	Ti's So	First	10 00
Stallion 1 year old and under 2.			
E. Hickey, Claylick, O.	Stallion Colt	First	5 00
C. A. Valentine, Urbana, O.	Wraskel	Second.	3 00
Mare 4 years old and over.			
G. W. O'Harra, Alton. O.	Perditta		
H. J. Booth, Columbus, O.	Aunt Kate		
Same	Finale	First	15 00
E. Hickey, Claylick, O.	Bonnie Maid		
C. A. Valentine, Urbana, O.	Cleito	Second.	10 00

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Mare with two of her progeny.			
E. Hickey, Claylick, O.	Bonnie Maid	First	$20 00

C. H GANSON—Expert Judge.

Roadsters—Standard Bred.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 4 years old and over.			
S. H. Turner, Columbus O	Esparto Rex	First	$20 00
C. H. Surface, Waynesville, O	Capt. Purcell	Second.	10 00
Warren Searles, Galena, O	George Salsberry		
W. A. Stephens, Columbus, O	Berkmont		
J. A. Hall, Columbus, O	Geo. T. Putney		
Thos. G. Fleming, Hanover, O			
Mrs. C. M. Ball, So. Charleston, O	Earl of Linhurst		
T. S. Shallenberger & Co. Amanda, O	Fairfield Boy		
Stallion 3 years old and under 4.			
T. L. Magruder, Xenia, O	Morrow	First	20 00
C. H. Surface, Waynesville, O	Pekin Purcell		
Stallion 2 years old and under 3.			
Jacob Heldman, Jenera, O		First	10 00
A. R. Miller, Pataskala, O			
Stallion 1 year old and under 2.			
T. L. Magruder, Xenia, O	Cambyses	First	10 00
M. A. Greene, Johnstown, O	Ruben Tell	Second.	5 00
A. R. Miller, Pataskala, O			
Stallion colt.			
M. A. Greene, Johnstown, O	Johnstown Boy	First	5 00
A. R. Miller, Pataskala O		Second.	3 00
Mare 4 years old and over.			
M. A. Greene, Johnstown, O	Can't Tell	First	15 00
A. R. Miller, Pataskala, O		Second.	10 00
T. Shallenberger & Co., Amanda, O	Belle Wylie		
C. F. Bishop, Springfield, O			
Mare 3 years old and under 4.			
Otto Jones, Columbus, O		First	10 00
T. Shallenberger & Co., Amanda, O	Francis D	Second.	5 00
Mare 2 years old and under 3.			
A. T. Hallock, Columbus, O	Rex Anna	First	10 00
T. L. Magruder, Xenia, O	Glosietta A	Second.	5 00
A. R. Miller, Pataskala, O			
C. F. Bishop, Jerome, O			
Filly 1 year old and under 2.			
A. R. Miller, Pataskala, O		First	10 00
C. H. Bell, Ashley, O		Second.	5 00
Filly colt.			
A. R. Miller, Pataskala, O		First	5 00

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion with four of his colts.			
C. H. Purcell, Waynesville, O		First	$25 00
C. H. Bell, Ashley, O	Brinkley		
T. Shallenberger & Co., Amanda, O			
Mare with two of her progeny.			
M. A. Greene, Johnstown, O		First	20 00
A. R. Miller, Pataskala, O			

CHAS. WOODWARD—Judge.

ROADSTERS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 4 years old and over.			
W. A. Stephens, Columbus, O	Berkmont	First	$20 00
C. H. Surface, Waynesville, O	Mike Purcell	Second.	10 00
B. F. Parsell & Sons, Reynoldsburg, O	Columbus Wilkes		
Jno. Evans, Newark, O			
J. W. H. Stalter, Wagram, O	Alert		
Thos. G. Fleming, Hanover, O			
Jacob Heldman, Jenera, O			
Stallion 3 years old and under 4.			
C. H. Surface, Waynesville, O	Harry Purcell	First	20 00
M. A. Greene, Johnstown, O	Bert Wilkes	Second	10 00
W. L. McCurdy, Ashley, O			
Stallion 2 years old and under 3.			
Elmer Whipple, London, O		First	10 00
T. Shallenberger & Co., Amanda, O		Second.	5 00
Stallion 1 year old and under 2.			
C. H. Surface, Waynesville, O	Victor Purcell	First	10 00
R. H. Saxton, Granville, O		Second.	5 00
J. S. Wolf, Reynoldsburg, O	Capt. Wilton		
E. W. Rodebaugh, Reynoldsburg, O	Ward		
C. H. Bell, Ashley, O			
T. Shallenberger & Co, Amanda, O	Amanda Boy		
Stallion colt.			
Wm. McKinney, Ashley, O		First	5 00
Warren Searles, Galena, O	Joe		
Mare 4 years old and over.			
Ed. Hale, Columbus, O	Delcasse	First	15 00
C. H. Surface, Waynesville, O	Pearl Purcell	Second.	10 00
Warren Searles, Galena, O	Bessie Wilkes		
B. F. Parsell & Son, Reynoldsburg, O	Columbus Girl		
Jno Evans, Newark, O			
Thos. G. Fleming, Hanover, O			
T. M. Payne, Johnstown, O			
D. M. Bell, Leonardsburg, O	Miss Francis		

ROADSTERS—Concluded.

Owner's Name and Postoffice.	Name of Animal	Premium.	Amount.
Mare 3 years old and under.			
T. L. Magruder, Xenia, O.	Xenia Belle	First	$10 00
Mare 2 years old and under 3.			
Shed Westbrook, Stantontown, O.	Lady B.	First	10 00
J. W. H. Stalter, Wagram, O.	Easter Girl	Second.	5 00
Fred Fincht, Blacklick, O.	Minnie		
B. F. Parsell & Son, Reynoldsburg, O.	Hattie W.		
J. A. Hale, Columbus, O.	Little Bridget		
Filly 1 year old and under 2.			
G. J. Henning, Stantontown, O.	Nancy J.	First	10 00
Geo. Garlinghouse, Galena, O.	Mame	Second.	5 00
B. F. Parsell & Son, Reynoldsburg, O.	Miss Dewy		
F. L. Postle, Camp Chase, O.	Caroline		
A. R. Miller, Pataskala, O.			
R. H. Saxton, Granville, O.			
Filly colt.			
G. J. Fleming, Stantontown, O.	Allie	First	5 00
Frank Darst, Ashley, O.		Second.	3 00
F. L. Postle, Camp Chase, O.	Bee Line		
A. M. Gibson, Camp Chase, O.	Angeline		
R. H. Saxton, Granville, O.			

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion with four of his colts.			
B. F. Parsell & Son, Reynoldsburg, O.	Columbus Wilkes and 4 colts	First	$25 00
Mare with two of her progeny.			
G. J. Fleming, Stantontown, O.	Bell P	First	20 00
F. L. Postle Camp Chase, O.	Walnut Bud and colts		
E. W. Rodebaugh, Reynoldsburg, O.	Kit		
R. H. Saxton, Granville, O.			
C. H. Bell, Ashley, O.			

CHAS. WOODWARD—Judge.

FRENCH COACH HORSES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 4 years old and over.			
McLaughlin Bros., Columbus, O	Quince	First	$20 00
B. F. Harriss, West Liberty, O	Mousquetaire	Second.	10 00
McLaughlin Bros., Columbus, O	Quincy		
Stallion 3 years old and under 4.			
McLaughlin Bros., Columbus, O	Reseda	First	20 00
Same	Regal	Second.	10 00
Same	Rafale		
Same	Riquiet,		
Same	Roscoff		
Same	Regale		
Same	Rajon D'oe		
Stallion 2 years old and under 3.			
McLaughlin Bros., Columbus, O	Serguis	First	10 00

WILLIAM WILKIN—Judge.

GERMAN COACH HORSES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 4 years old and over,			
Bell Bros., Wooster, O	Wegwiser	First	$20 00
Same	Schneidg	Second.	10 00
Same	Solomon		
McLaughlin Bros., Columbns, O	Benjamin		

WILLIAM WILKIN—Judge.

CLEVELAND BAYS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 4 years old and over.			
R. E. McDaniels, Springfield, O	Ingram Thorpe Venture	First.	$20 00
Stallion 3 years old and under 4.			
McLaughlin Bros., Columbus, O	Prince Beauty	First	20 00
C. H. Surface, Waynesville, O		Second.	10 00
Stallion 2 years old and under 3.			
T. Shallenberger & Co., Amanda, O		First	10 00

WILLIAM WILKIN—Judge.

HACKNEYS.

Owner's Name and Postoffice.	Name of Animal	Premium.	Amount.
Stallion 3 years old and under 4.			
McLaughlin Bros., Columbus, O.	Rival Performer.	First.	$20 00

CHAS. WOODWARD—Judge.

FRENCH DRAFT.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 4 years old and over.			
Bell Bros., Wooster, O.	Rigolo	First.	$20 00
Same	Roberto	Second.	10 00
G. W. O'Harra, Alton, O.	Black Bill		
McLaughlin Bros., Columbus, O.	Nerviux		
Same	Jules		
Same	Turcouf		
F. M. Baldwin, Ashley, O.	Albani		
Same	Black Hawk		
Same	France		
H. L. Eckels, Cardington, O.	London		
Jacob Heldman, Jenera, O.			
Stallion 3 years old and under 4.			
Bell Bros., Wooster, O.	Demon II	First.	20 00
Riley Graves, Center Village, O.	Livarot	Second.	10 00
Bell Bros., Wooster, O.	Troy Brilliant		
Same	Grover		
Stallion 2 years old and under 3.			
McLaughlin Bros., Columbus, O.	Moscow	First.	10 00
Same	Clothaire	Second.	5 00
Bell Bros., Wooster, O.	Gambetta		
Stallion 1 year old and under 2.			
McLaughlin Bros., Columbus, O.	Valory	First.	10 00
Bell Bros., Wooster, O.	Eminent	Second.	5 00
Chas Kunze, Delaware, O.	Romulus		
Stallion colt.			
E. P. Roloson, West Berlin, O.	Willard	First.	5 00
G. H. Riley, Stantontown, O.		Second.	3 00
W. W. Ferguson, Delaware, O.			
F. M. Baldwin, Ashley, O.	Jumbo		
Same	Boo		
Mare 4 years old and over.			
Bell Bros., Wooster, O.	Rosa Bell.	First.	15 00
F. M. Baldwin, Ashley, O.	La Perche	Second.	10 00
Mare 3 years old and under 4.			
A. J. Kiner, North Columbus, O.	Bet	First.	10 00
Mare 2 years old and under 3.			
F. M. Baldwin, Ashley, O.	May	First.	10 00
E. P. Roloson, West Berlin, O.	Flora	Second.	5 00

FRENCH DRAFT—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Filly 1 year old and under 2.			
G. H. Riley, Stantontown, O.		First	$10 00
E. P. Roloson, West Berlin, O.	Nellie	Second.	5 00
Filly colt.			
Bell Bros., Wooster, O.	Queen	First	5 00
F. M. Baldwin, Ashley, O.	Mary		
Same	Molly		
Same	Dolly		

SWEEPSTAKES.

Owner's Name and Postoffice	Name of Animal.	Premium.	Amount.
Stallion with four of his colts.			
Bell Bros., Wooster, O.	Rigolo and colts	First.	$25 00
F. M. Baldwin, Ashley, O.	Albani and colts		
Mare with two of her progeny.			
Bell Bros., Wooster, O.		First	20 00
F. M. Baldwin, Ashley, O.			
G. H. Riley, Stantontown, O.	Prudence		

T. A. JOHNSTON - Judge.

CLYDESDALES AND SHIRES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 4 years old and over.			
Paul Reymann, Wheeling, W. Va.	Fort Atkinson Colonel	First	$20 00
M. M. Leonard, Enon, O.	Conqueror	Second.	10 00
McLaughlin Bros., Columbus, O.	Scottish Champion		
T. Shallenberger & Co., Amanda, O.	Gilt Edge		
Stallion 3 years old and under 4.			
G. W. Grauer, Springfield, O.	Saucy Boy	First	20 00
Stallion 2 years old and under 3.			
M. M. Leonard, Enon, O.	Mount Jewell	First	10 00
Jennie Williams, Worthington, O.	Brady		
Stallion colt			
M. M. Leonard, Enon, O.	Dewey	First	5 00

CLYDESDALES AND SHIRES—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Mare 4 years old or over.			
M. M. Leonard, Enon, O.	Sprotbow Charmer	First	$15 00
Same	Trojan Belle	Second	10 00
Mare 2 years old and under 3.			
M. M. Leonard, Enon, O.	Trilby	First	10 00
Filly 1 year old and under 2.			
M. M. Leonard, Enon, O.	Bess	First	10 00

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion with 4 of his colts.			
M. M. Leonard, Enon, O.	Conqueror	First	$25 00
Mare with two of her progeny.			
M. M. Leonard, Enon, O.	Trojan Belle	First	20 00

J. A. JOHNSTON--Judge.

GRADE COACH HORSES.

Owner's Name and Postoffice	Name of Animal.	Premium.	Amount.
Gelding or mare 4 years old or over.			
Nichols Bros., Fulton, O.	Bill	First	$10 00
W. M. Brimbec, Bennington, O	Bird	Second.	5 00
G. W. Hiskett & Son, Fulton, O.	High Flyer		
Isaac Nichols, Fulton, O.	Dandy		
R. H. Saxton, Granville, O.			
S. H. Turner, Columbus, O.	Greenback		
Gelding or mare 3 years old and under 4.			
G. W. Hiskett & Son, Fulton, O.	Cut-a-Dash	First	10 00
C. H. Bell, Ashley, O.		Second.	5 00
Jno. Evans, Newark, O.			
J. W. H. Stalter, Wagram, O.	Billy		
Gelding or mare 2 years old and under 3.			
G. W. Hiskett & Son, Fulton, O.	Dewey	First	10 00
C. H. Bell, Ashley, O.		Second.	5 00
Geo A. Geyer, Alton, O.	Dock		
E. W. Rodebaugh, Reynoldsburgh, O	Robert		
T. Shallenberger & Co., Amanda, O.			

GRADE COACH HORSES—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Gelding or mare 1 year-old and under 2.			
W. E. Garlinghouse, Galena, O	Billie	First	$10 00
A. R. Miller, Pataskala, O		Second	5 00
Ransom Havens, Lewis Center, O	Daisy		
Ransom Havens, Lewis Center, O	Topsy		
Matched team to be shown in harness.			
Nichols Bros., Fulton, O		First	15 00
W. M. Brimbee, Bennington, O		Second	8 00
G. W. Hiskett & Son, Fulton, O	Highflyer and Cut-a-Dash		
C. D Firestone Columbus, O	Broadway and Cumpton		
S. H. Turner, Columbus, O	Greenback and Currency		

C. H. GANSON—Judge.

GRADE DRAFT.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Gelding or mare 4 years old or over.			
W. W. Ferguson, Delaware, O	Rosy	First	$10 00
John Fladt, Hilliard, O	Daisy	Second	5 00
F. M. Baldwin, Ashley, O	Mad		
Gelding or mare 3 years old and under 4.			
J. Kiner, North Columbus, O	Dewey	First	10 00
Shed Westbrook, Stantontown, O	Polly	Second	5 00
H. J. Booth, Columbus, O	Margaret N		
A. B. Shafer, Vans Valley, O			
John Fladt, Hilliard, O	Nellie		
W. E. Garlinghouse, Galena, O	Frank		
Gelding or mare 2 years old and under 3.			
Shed Westbrook, Stantontown, O	Duke	First	10 00
F. C. Brown, Bennington, O		Second	5 00
C. H. Mathews, Station B, Columbus, O	Doctor		
W. M. Brimbee, Bennington, O	Tim		
John Fladt, Hilliard, O	Jennie		
Elmer Roloson, West Berlin, O	Topsy		
Gelding or mare 1 year old and under 2.			
F. M. Baldwin, Ashley, O	Kit	First	10 00
Elmer Roloson, West Berlin, O	Dew Drop	Second	5 00
Matched team to be shown in harness to appropriate vehicle.			
W. W. Ferguson, Delaware, O	Rosy and Doll	First	15 00
John Fladt, Hilliard O		Second	8 00
A. B. Shafer, Vans Valley, O			
W. E. Garlinghouse, Galena, O	Frank and Don		

A. JOHNSTON—Judge.

SADDLE HORSES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 4 years old or over.			
W. A. Stephens, Columbus, O	Berkmont	First	$15 00
Mare 4 years old or over.			
E. L. McCollem, Columbus, O	Fay Rose	First	15 00
J. B. Vanse, Lockbourne, O	Louis	Second	8 00
J. A. Wallace, Columbus, O	Fern Leaf		
E. L. McCollem, Columbus, O	Bertha Temple		
W. A. Stephens, Columbus, O	Susie's Baby		
Mare under 4 years of age.			
J. B. Vanse, Lockbourne, O	Bonnie	First	10 00
Gelding 4 years old or over.			
Geo. K. Nash, Columbus, O	Denmark	First	15 00
J. A. Wallace, Columbus, O	Bruce	Second	8 00
F. B Peters, Lockbourne, O	Bruce		
James Kincaid, Columbus, O	Nathan B		
Gelding under 4 years of age.			
J. A. Wallace, Columbus, O	Alti	First	10 00

COMBINED HARNESS AND SADDLE HORSES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallions.			
W. A. Stephens, Columbus, O	Berkmont	First	15 00
Mare or gelding.			
James Kincaid, Columbus, O	Nathan B	First	15 00
J. B. Vanse, Lockbourne, O	Louis	Second	8 00
Geo. K. Nash, Columbus, O	Denmark		
J. A. Wallace, Columbus, O	Alti		
Same	Bruce		
E. L. McCollem	Fay Rose.		

HIGH SCHOOL HORSE, MARE OR GELDING.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Geo. K. Nash, Columbus, O	Denmark	First	15 00
E. L McCollem, Columbus, O	Fay Rose	Second	8 00
J. A. Wallace, Columbus, O	Fern Leaf		
Same	Bruce		
Same	Kit Clover		

H. C. TAYLOR—Judge.

MATCHED HORSES AND FANCY DRIVERS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Pair matched roadsters.			
C. H. Surface, Waynesville, O		First	$20 00
S. H. Turner, Columbus, O		Second.	10 00
A. H. Andrews, Columbus. O	Duke and Robin		
C. D. Firestone, Columbus, O	Broadway and Compton		
T. M. Payne, Johnstown O			
Gent's fancy driving team.			
S. H. Turner, Columbus, O.		First	20 00
J. A. Hall, Columbus, O		Second	10 00
Page Woven Wire Fence Co., Adrian, Mich	Bell and Bess		
C. H. Surface, Waynesville, O			
C. D. Firestone Columbus, O	Broadway and Compton		
Mrs. C. M. Ball, South Charleston, O	John L. and Billy T		
T. Shallenberger & Co., Amanda, O	Bryan and Harry		
Gent's fancy single driver.			
S. H. Turner, Columbus, O.		First	10 00
Ed. Hall, Columbus O	Delcosse	Second.	5 00
G. W. Hiskett & Son. Fulton, O	Highflyer		
Charles A. Pearce, Columbus, O	Charlie		
F. C. Brown, Bennington, O	Billy B		
Same	Tony D		
J. A. Hall, Columbus, O	Douglass		
Jno. Evans, Newark, O			
A. R. Miller, Pataskala O			
T. Shallenberger & Co., Amanda, O			
C. C. Caner. Patsakala, O.			
Single horse driven by a lady.			
Mrs. E. M. Ball, South Charleston, O	John L	First	5 00
F. C. Brown. Bennington, O		Second.	3 00
Charles A. Pearce, Columbus, O			
Mrs. Sam Taylor, Pleasant Corners, O	Emma		
Jno. Evans, Newark, O			
Double team driven by a lady.			
Mrs. C. M. Ball, South Charleston, O	John and Billy	First	10 00
C. D. Firestone, Columbus, O	Broadway and Compton		
Mrs. Sam Taylor, Pleasant Corners, O			
F. C. Brown, Bennington, O	Joe Wilkes and Tony D		

CHAS WOODWARD—Judge.

SHETLAND PONIES.

Owner's Name and Postoffice.	Name of Animal.	Premiums.	Amount.
Stallion 3 years old and over.			
Cobb Gavitt, Ashley, O	Ben Harrison	First	$15 00
W. J. Sampson, Youngstown, O	Royal Buster	Second.	8 00
Stallion 2 years old and under 3.			
Cobb Gavitt, Ashley, O	Tom		
Same	Jerry		
W. J. Sampson, Youngstown, O	Dixie		

SHETLAND PONIES—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 1 year old and under 2.			
W. J. Sampson, Youngstown, O.	Gloam	First	$5 00
Cobb Gavitt, Ashley, O	Jerry	Second.	3 00
Stallion under 1 year of age.			
Cobb Gavitt, Ashley O		First	3 00
W. J. Sampson Youngstown, O.	Yankee Doodle	Second.	2 00
Mare 3 years old or over.			
Cobb Gavitt, Ashley, O	Lady	First	10 00
W. J. Sampson, Youngstown, O	Pandora	Second.	5 00
Same	Jessie		
Cobb Gavitt, Ashley, O	Nicely		
Harvey Cockell, Columbus, O	Pet		
Mare 2 years old and under 3.			
Cobb Gavitt, Ashley, O	Bell	First	10 00
W. J. Sampson, Youngstown, O	Keepsake	Second.	5 00
Filly 1 year old and under 2.			
Cobb Gavitt, Ashley, O	Kate	First	5 00
Same	Mame	Second.	3 00
Filly under 1 year.			
Cobb Gavitt, Ashley, O		First	3 00

C. M. JONES—Judge.

PONIES.

Open to all breeds, except Shetland.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 3 years old or over.			
W. J. Sampson, Youngstown, O.	Hazeldean Major	First	$15 00
Stallion under 1 year.			
Cobb Gavitt, Ashley, O		First	3 00
Mare 3 years old or over.			
W. J. Sampson, Youngstown, O	Pilgrim	First	10 00
Same	Mayflower	Second.	5 00

C. M. JONES—Judge.

PONY TURNOUTS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Single turnout driven by boy or girl under 14.			
Cobb Gavitt, Ashley, O.		First	$10 00
W. J. Sampson, Youngstown, O.	Jessie	Second	5 00
Same	Gomez		
McLaughlin Bros., Columbus, O.			
Double team turnout driven by boy or girl under 14.			
Cobb Gavitt, Ashley, O.		First	15 00
W. J. Sampson, Youngstown, O.	Gomez and Maceo	Second	5 00
McLaughlin Bros., Columbus, O.			
Tandem.			
W. J. Sampson, Youngstown, O.	Gomez and Maceo	First	10 00
Four-in-hand.			
W. J. Sampson, Youngstown, O.	Gomez, Maceo, Mayflower and Pilgrim	First	15 00
Cobb Gavitt, Ashley, O.			

C. H. GANSON—Judge.

SPECIAL PREMIUMS.

Offered by the American Percheron Horse Breeders' Association.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Three stallions.			
McLaughlin Bros, Columbus, O.	Nerviux	First	$25 00
Same	Moscow	Second	15 00
Same	Turcouf	Third	10 00
Same	Clothaire		

Offered by the French Coach Horse Society of America.

Three Stallions.			
McLaughlin Bros., Columbus, O.	Requet	First	$25 00
Same	Regal	Second	15 00
Same	Quincy	Third	10 00
Same	Regal		
Same	Cherburg		
Same	Rajon D'oe		
Same	Roscoff		
Same	Rafale		

WM. WILKIN—Judge

SUMMARY OF THE RACES.

2:20 CLASS—TROTTING

Entered by	Name of Animal.	Heats.			
T. E. Stuard, Springfield, O.	Thesla, b. g	9	6	4	8
D. Raybould, Dayton, O	Moses, g. g	7	7	6	3
Geo. Shoenberger. Warren, O	Brooklawn, b. s	2	4	2	2
S. H. Turner, Columbus, O	Esparto Rex br. s	6	9	8	6
M. J. Kearns, Springfield, O	Bessie K , br. m	4	2	5	4
Chas. Gauntlett, Milan, O	Hazel Ridge. ch. s	1	3	3	5
V. E. Thomas, Portsmouth, O	Black Beauty, blk. g	5	5	9	7
Woodward Bros. Perintown, O	Daisy M.. b. m	8	8	7	9
Andy Coleman, Springfield, O	Superior Wilkes	3	1	1	1

Time—2.20¼, 2.19¼, 2.19¼, 2.20.

2:19 CLASS--PACING.

Entered by	Name of Animal.	Heats.			
John Derr, Mansfield, O	Next, b. g	2	4	3	4
Wm. Motteler, Springfield, O	Startle Wilkes, b. g	4	7	6	Dr.
O. Whitson, New Burlington, O	Ethel P., br. m	1	3	7	6
Dr. C. E Leist, Columbus, O	Mabel B	6	5	4	3
L. B. Murphy, Columbus, O	Col. Dick Thompson, br. g	8	8	5	5
C. I. Sartewell & Co., Erie Depot	Walker Wilkes, b. g	3	2	2	2
T. H. Gaitshill, Paris, Ky.	Carley, b. g	Dis.			
J. H. Swisher, Newark, O	Joker Patchin, ch. g	7	1	1	1
C. A. Gosnell, Cambridge, Ind	Royal Vein, b. s	5	6	8	7

Time—2.17¼, 2.17¼, 2.17½, 2.17½.

2:40 CLASS—TROTTING.

Entered by	Name of Animal	Heats.		
F. E. DeWeese, Chillicothe, O	Dick Wilkes. b. g	2	4	4
Smiley Caldwell, Chillicothe, O	Bertha Lee, blk m	1	1	1
T. L Magruder, Xenia. O	Lida, dn. m	5	5	6
Wm. Bryant. Toledo, O	Walter B., gr. g	6	6	5
John Clark, Paris, Ky	Miss Haley, b. m.	3	2	3
N. Ramsey, Sunbury, O	Dewey, b. g	11	Dis.	
Otto Jones, Columbus, O	Babe, b. m	8	Dis.	
D. R. Moysey, Elyria, O	Rob Roy, ch g	4	3	2
Max Seyfert, Circleville O	Sampson, br. g	10	Dis.	
W. J. Bauer. Jackson Mich	Vervian, br. m	7	Dis.	
C. A. Gosnell, Cambridge, Ind	Ethel B., s. m	9	7	Dis.

Time—2.24¼. 2.23¼, 2.23¼.

2:25 CLASS—TROTTING.

Entered by	Name of Animal.	Heats.					
T. W. Dellinger, Portland, Ind	Harry, blk. g	1	3	9	3	1	1
Cliff Todd, Carthage. O	Rainforth. blk. g	2	1	2	8	6	3
Huntington Brown, Mansfield. O	Thornwitch, ch. m	9	6	5	2	7	
W. F. Freeman, Lexington, Ky	Tapestry, blk. g	5	9	8	4	5	
W. D. Wood, Williamsport, O	Woodlyn, b. m	8	5	6	7	Dr.	
E. E. Wideman, Elyria, O	Helena, ch. m	4	4	1	1	4	2
W. E. Lake, Columbus, O	Incarnate, blk. g	7	8	3	9	Dr.	
Chas. Perry, Richwood, O	Pug, g g	3	2	7	6	2	
G. W. Gilliland, Washington C. H , O	Billy Russell, b. s	6	7	4	5	3	

Time—2 21¼, 2.18¼, 2.21¼, 2.20¼, 2.22, 2.25.

2:27 CLASS—PACING.

Entered by	Name of Animal.	Heats.		
J. A. Hall, Columbus, O	Minnie Young, g. m	4	2	2
L. B. Murphy, Columbus, O	George Hooff, b. s	2	3	5
A. S. Beyerly, Columbus, O	Fanchion, b. m.	5	4	4
C. D. Loudenback, Urbana, O	Easter Girl, b. m.	3	5	7
C. W. Phillis, Mechanicsburg, O	Gypsey Red, ch. m.	1	1	1
John Sandusky, Gahanna, O	Rooster Boy, gr. s	9	Dis.	
G. W. Glass, Milledgeville, O	Dorfmont	6	6	6
O. Whitson, New Burlington, O	Lady Hal	7	7	Dr.
C. F. Bishop, Jerome, O	Adelphia, b. m.	8	8	3

Time—2:21¼, 2:19½, 2:19¼.

2:30 CLASS—TROTTING.

Entered by	Name of Animal.	Heats.		
H. A. McCullough, Troy, O	June Wilks b. s.	7	6	4
R. R. Berkshire, Plain City, O	Pauline B , b. m	2	4	5
W. J. Bauer, Jackson, Mich	Vernon, br. m	6	8	7
F. E. De Weese, Chillicothe, O	Ella Mack, b. f	4	5	6
D. R. Moysey, Elyria, O	Rob Roy, ch. g	3	3	2
S. Caldwell, Mansfield, O	Bertha Lee, blk. m	1	1	1
S. L. Hoover, Columbus, O	Neilson, b. g	5	2	3
Edw. Welch, Delaware, O	Prince Paris	8	7	8

Time—2:25½, 2:23¼, 2:23½

HURDLE RACE—ONE MILE DASH.

Entered by	Name of Animal.	Heats.
J. W. Thomas, New York City	Target, b. g	3
C. E. Hudson, Cleveland, O	Borderer, b. s	2
E. Jones, Columbus, O	Lazzara, s. g	1
S. W. Lyons, Columbus, O	Dictate, br. g	4

Time—1:57.

RUNNING—ONE MILE DASH.

Entered by	Name of Animal.	Heats.
S. W. Lyons, Columbus, O	Tidiness, b. m	1
H. W. Newman, Cleveland, O	Elizbert, g. g	4
Jno. W. Thomas, New York City	Stretchrunner, s. s	2
C. E. Hudson, Cleveland, O	Sanger, b. g	5
Thos. A. Davies, Covington, Ky	Volzette, ch. m	3

Time—1:48.

RUNNING—HALF MILE HEATS.

Entered by	Name of Animal.	Heats.	
Philip Post, Hamilton, O.	Gorelante, b. f.	7	
J, Abrams, Ashland, Ky	Jersey Hunt, s. s.	1	1
Thos. A. Davies, Covington, Ky	Sidney Bender, b. s.	4	
Ed. Smith, Cincinnati, O.	Doc. Turbeville, b. s.	5	3
Wm. Davis, Madison Mills, O	Sallie D., r. m.	3	
E. A. Goodwin, Elyria, O.	Volida, ch. f.	2	2
W. H. Gore, Commercial Point, O.	Hay Seed, b. g.	6	

Time—.52, .57.

RUNNING—DASH OF ONE MILE AND A FURLONG.

Entered by	Name of Animal.	Heats.
H. W. Newman, Cleveland, O.	Gladiola, b. m.	2
J. Abrams, Ashland, Ky	Minnie D'Orr, b. m.	4
W. G. Matthews, Washington C. H.	Gray Eclipse, b. s.	1
E. W Fitzgerald, Cameron, W. Va	Lottie Hunter, b. m.	3

Time—2:03¾.

RUNNING—ONE MILE DASH.

Entered by	Name of Animal.	Heats.
Thos. A. Davies, Covington, Ky.	Volzette, ch. m.	4
S. W. Lyons, Columbus, O.	Tidiness, b. m.	1
C. E. Hudson, Cleveland, O.	Sanger, b. g.	3
Jno W. Thomas, New York City	Stretchrunner, s. s.	2

HURDLE RACE—ONE MILE DASH.

Entered by	Name of Animal.	Heats.
J. W. Thomas, New York City	Target, b. g.	3
C. E. Hudson, Cleveland, O.	Borderer, b. s.	2
E. Jones, Columbus, O	Lazzara, s. g.	1

Time—1:52.

RUNNING—HALF MILE HEATS.

Entered by	Name of Animal.	Heats.	
E. A. Goodwin, Elyria, O.	Volida, ch. f.	2	3
Wm. Davis, Madison Mills, O	Zenith b. g	4	4
Ed. Smith, Cincinnati, O.	Aroline	1	1
Thos. A. Davies, Covington, Ky.	Sidney Bender, b. s.	5	5
Wilber Carr, Hamilton, O.	Gorelanti, br. m.	3	2
F. Devereaux, Rockport, O	Mary Low, b. m.	6	Dr.

CONSOLATION RACE—HALF MILE HEATS.

Entered by	Name of Animal.	Heats.		
Wm. Davis, Madison Mills, O.	Zenith, b. g.	8	5	
E. A. Goodwin, Elyria, O.	Volida, ch. m.	5	1	1
Edw. Smith, Cincinnati, O.	Doc. Turbeville, b. s.	6	9	
Philip Post, Hamilton, O.	Gorelanti, b. m.	3	3	
S. W. Lyons, Columbus, O.	Dictate, br. g.	1	4	2
Wm. Davis, Madison Mills, O	Sallie D., br. m	7	2	
C. E. Hudson, Cleveland, O	Borderer, b. s.	2	7	
Thos. A. Davies, Covington, Ky.	Sidney Bender, b. s.	9	8	
W. H. Gore, Commercial Point, O.	Hay Seed, b. g.	4	6	

Time—.51¾, .51¼, .52.

HANDICAP—DASH OF ONE MILE.

Entered by	Name of Animal.	Heats.
J. W. Thomas, New York City.	Stretchrunner, s. s.	1
H. W. Newman, Cleveland, O.	Gladiola, b. m	4
S. W. Lyons, Columbus O.	Tidiness, b. m	2
Thos. A. Davies, Covington, Ky	Volzette, ch. m.	5
C. E. Hudson, Cleveland, O.	Sanger, b. g	3

Time—1.46½.

CATTLE—L. G. ELY, Member in Charge.

SHORTHORNS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 3 years old and over.			
Aaron Barber, Avon. N. Y	Sharon Marshall	First	$20 00
J. A. Gerlaugh, Harshman, O	Scottish King	Second.	10 00
H. P. Fry, Bettsville, O			
Darling Bros., Nellie, O	Imp Golden Cream		
Same	Sharon Appol		
W. I Wood, Williamsport, O	Valasco the 21st		
Bull 2 years old and under 3.			
C. L. Gerlaugh, Osborne, O	Captain White	First	20 00
Bull 1 year old and under 2.			
H. P. Fry, Bettsville. O	Scott Dick	First	10 00
Darling Bros., Nellie, O	Duke of Warsaw	Second.	5 00
Same	"		
W. I. Wood, Williamsport, O	Valasco Jr		
Same	Neville Boy 2nd		
Bull under 1 year.			
Aaron Barber. Avon. N. Y	Sharon Marshall, 2d	First	5 00
H. P. Fry, Bettsville, O	Dewey	Second.	3 00
Same			
Darling Bros., Nellie, O	Duke of Warsaw		
Same	Duke of Mohawk		
W. I. Wood, Williamsport, O	Woodland Chief 2d		
Same	Monarch Abbotsburn		
C. L Gerlaugh, Osborne, O	Commodore		
Same			
J. A. Gerlaugh, Harshman. O	Columbia		
Same	Cerms		
Same	Red Imperial		
Cow 3 years old or over.			
Aaron Barber, Avon, N. Y	Mary Abbotsburn 7th	First	15 00
C. L. Gerlaugh, Osborne. O	Prima Donna	Second.	10 00
H. P. Fry, Bettsville, O			
Same			
Aaron Barber, Avon, N. Y	English Lady 13th		
Darling Bros, Nellie, O.	Musa the 4th		
Same			
W. I. Wood, Williamsport, O	Woodland Bell		
Cow or heifer 2 years old and under 3.			
Aaron Barber, Avon, N. Y	Superba	First	10 00
Same	Lady Sharon 3d	Second.	5 00
H. P. Fry, Bettsville, O			
Darling Bros., Nellie, O	Belle of Warsaw		
Same	"		
W. I. Wood, Williamsport, O	Phyllias Abbottsburn		
Same	Abbotsburn's Champion Mary		
C. L. Gerlaugh, Osborne, O	Chalice		
J. A. Gerlaugh, Harshman O	Gun of Anvern		
Same	Emblem		
Heifer 1 year old and under 2.			
Aaron Barber, Avon, N. Y	Lady Sharon 5th	First	10 00
Same	Lady Sharon 4th	Second.	5 00
H. P. Fry, Bettsville, O			
Same			
Darling Bros., Nellie, O	Golden Bell 2d		
Same	Belle of Warsaw		
W. I. Wood Williamsport, O	Daisy of Woodland		
Same	Forest Belle		
C. L. Gerlaugh, Osborne, O	Lady Lavender		
J. A. Gerlaugh, Harshman, O	Evalina		

SHORTHORNS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Heifer under 1 year.			
Aaron Barber, Avon, N. Y	Isabella Marshall	First	$5 00
Same	Mary Marshall	Second	3 00
H. P. Fry, Bettsville, O			
Same			
Darling Bros., Nellie, O	Belle of Warsaw		
Same	Musa		
W. I. Wood, Williamsport, O	Daisy of Woodland 2d		
Same	Forest Belle 7th		
C. L. Gerlaugh, Osborne, O	Mary Lavender		

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
EXHIBITOR'S HERD.			
Bull 2 years old or over and graded herd.			
Aaron Barber, Avon, N. Y		First	$40 00
H. P. Fry, Bettsville, O			
Darling Bros., Nellie, O			
W. I. Wood, Williamsport, O			
C. L. Gerlaugh, Osborne O			
BREEDER'S HERD.			
Bull 2 years old or under and graded herd.			
Aaron Barber, Avon, N. Y		First	40 00
H. P. Fry, Bettsville, O			
W. I. Wood, Williamsport, O			
Four animals of either sex.			
Aaron Barber, Avon, N. Y		First	30 00
H. P. Fry, Bettsville, O			
Darling Bros., Nellie, O			
J. A. Gerlaugh, Harshman, O			

S. P. SISSON, Wheeling, W. Va.—Expert Judge.

DEVONS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 3 years old or over.			
W. E. Lewis, Casstown, O	Brat W	First	$20 00
E. S. Whitmore, Troy, O	Upright	Second	10 00
Bull 2 years old and under 3.			
W. E. Lewis, Casstown, O	Binton	First	20 00
Bull 1 year old and under 2.			
E. S. Whitmore, Troy, O	Bunnor	First	10 00

DEVONS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull under 1 year.			
W. E. Lewis, Casstown, O	Burner L	First	$5 00
Same		Second.	3 00
E. S. Whitmore, Troy, O	Charlie		
Cow 3 years old or over.			
W. E. Lewis, Casstown, O	Florence	First	15 00
E. S. Whitmore, Troy, O	Charlotte Best	Second.	10 00
Same	Dora V		
W. E. Lewis, Casstown, O	Hillside Beauty 2d		
Cow or heifer 2 years old and under 3.			
E. S. Whitmore, Troy, O	Fanny C	First	10 00
W. E. Lewis, Casstown, O	Carrie C	Second.	5 00
E. S. Whitmore, Troy, O			
Heifer 1 year old and under 2.			
E. S. Whitmore, Troy, O	Francis M	First	10 00
W. E. Lewis, Casstown, O	Blanche Lewis 2d	Second.	5 00
Same	Myrtle L. 2d		
Same	Gladys		
E. S. Whitmore, Troy, O			
Heifer under 1 year.			
W. E. Lewis, Casstown, O	Scoop L	First	5 00
Same	Sadie L	Second.	3 00
E. S. Whitmore, Troy, O			
Same			

SWEEPSTAKES.

Owner's Name and Postoffice	Name of Animal.	Premium.	Amount.
EXHIBITOR'S HERD.			
Bull 2 years old or over and graded herd.			
W. E. Lewis, Casstown, O		First	$40 00
E. S. Whitmore, Troy, O			
BREEDER'S HERD.			
Bull 2 years old or under and graded herd.			
E. S. Whitmore, Troy, O		First	40 00
W. E. Lewis, Casstown, O			
Four animals of either sex.			
E. S. Whitmore, Troy, O		First	30 00

S. P. SISSON, Wheeling, W. Va.—Expert Judge.

HEREFORDS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 3 years old or over.			
W. H. Curtice, Eminence, Ky	Beau Donald	First	$20 00
Bull 2 years old and under 3.			
Murry Boocock, Kiswick, Va	Salsbury	First	20 00
Bull under 1 year.			
W. H. Curtice, Eminence, Ky	Joe Perry 5th	First	5 00
Cow 3 years old or over.			
Murry Boocock, Kiswick, Va	Curly Lady	First	15 00
Same	Shadeland Lorna	Second.	10 00
Heifer 1 year old and under 2.			
Murry Boocock, Kiswick, Va	Princess Oliver	First	10 00
Heifer under 1 year.			
W. H. Curtice, Eminence, Ky	Early Princess	First	5 00
Murry Boocock, Kiswick, Va	Mistress Peerless Wilson	Second.	3 00

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
EXHIBITOR'S HERD.			
Bull 2 years old or over and graded herd.			
Murry Boocock, Kiswick, Va	Salsbury Herd	First	$40 00

L. P. SISSON, Wheeling, W. Va.—Expert Judge.

JERSEYS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 3 years old and over.			
James R. Orr, Cedarville, O	Pride	First	$20 00
J. E. Robbins, Greensburg, Ind	Czar Coomarrie	Second.	10 00
W. H. O. Goist, Girard, O	St. Paris of Prospect	....	....
Bull 2 years old and under 3.			
J. E. Robbins, Greensburg, Ind	Sam Anderson	First	20 00
James R. Orr, Cedarville, O	Alcyone	Second.	10 00

JERSEYS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 1 year old and under 2.			
W H. O. Goist, Girard, O	Cedar Grove's St. Lambert.	First	$10 00
J. E. Robbins Greensburg, Ind	Emanon	Second	5 00
Same			
Bull under 1 year.			
James R. Orr, Cedarville, O	Geo. Dewey	First	5 00
W. H O. Goist, Girard, O	Dewey	Second	3 00
Same			
J. E. Robbins, Greensburg, Ind	Constance Lad		
James R. Orr, Cedarville, O	Schley		
Cow 3 years old and over.			
J. E Robbins Greensburg, Ind	Pearl Penrie	First	15 00
W. H. O. Goist, Girard, O	Princess Wellington	Second	10 00
Same	Clochette Pogis		
J. E. Robbins, Greensburg, Ind	Kings Fancy Nenita		
Cow or heifer 2 years old and under 3.			
W. H. O Goist, Girard, O	Mary Jane, of Cedar Grove	First	10 00
J. E. Robbins, Greensburg, Ind	Stoke Stella 3d	Second	5 00
W. H. O. Goist, Girard O	Beryl, of Cedar Grove		
James R. Orr, Cedarville, O	Lady Gem		
Same	Jewell		
Heifer 1 year old and under 2.			
J. E. Robbins, Greensburg, Ind	Etheele Khedive 2d	First	10 00
W. H. O. Goist, Girard, O	Lyme, of Cedar Grove	Second	5 00
Same			
J. E. Robbins, Greensburg, Ind			
James R. Orr, Cedarville, O	Pearl		
Same	Della		
Heifer under 1 year.			
J. E. Robbins, Greensburg, Ind		First	5 00
W. H. O. Goist, Girard, O		Second	3 00
Same			
J. E. Robbins, Greensburg, Ind			
James R. Orr, Cedarville, O			

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
EXHIBITOR'S HERD.			
Bull 2 years old or over and graded herd.			
J. E. Robbins, Greensburg, Ind		First	$40 00
W. H. O. Goist, Girard, O			
BREEDER'S HERD.			
Bull 2 years old and under with graded herd.			
W. H. O. Goist, Girard, O		First	40 00
J. E. Robbins, Greensburg, Ind			
James R. Orr, Cedarville, O			
Four animals of either sex.			
J. E. Robbins, Greensburg, Ind		First	30 00
W. H. O. Goist, Girard, O			
James R. Orr, Cedarville, O			

GEO. C. CAMPBELL, Salem, O.—Expert Judge.

GUERNSEYS.

Owner's Name and Postoffice.	Name of Animal.	Premium	Amount.
Bull 3 years old and over.			
L. V. Axtell, Perry, O	Dolly's Duke	First	$20 00
McCormick & Edgerly, Pataskala, O	Traveler's Volunteer	Second.	10 00
P. G. Walker, Cecil, Pa	Farquin of Karolin		
L. V. Axtell, Perry, O	Keith of Riverside		
Bull 2 years old and under 3.			
L. V. Axtell, Perry, O	Old Homestead	First	20 00
McCormick & Edgerly, Pataskala O	Osborne	Second.	10 00
L. V. Axtell, Perry, O			
Bull 1 year old and under 2.			
L. V. Axtell, Perry, O.	Homestead Duplicate	First	10 00
McCormick & Edgerly, Pataskala, O	Jimbo	Second.	5 00
Same	Sambo		
P. G. Walker, Cecil, Pa	Duke of Cecil		
Bull under 1 year.			
P. G. Walker, Cecil, Pa		First	5 00
McCormick & Edgerly, Pataskala, O	Rattler	Second.	3 00
Same	Remus		
L. V. Axtell, Perry, O	Marion Pavoy's Boy		
Same			
Cow 3 years old and over.			
L. V. Axtell, Perry, O		First	15 00
McCormick & Edgerly, Pataskala, O	Manilla	Second.	10 00
P. G. Walker, Cecil, Pa	Rose Page		
L. V. Axtell, Perry, O	Mousie Perry		
Same	Hermosa 2d		
Cow or heifer 2 years old and under 3.			
P. G. Walker, Cecil, Pa	Artie of Cecil	First	10 00
L. V. Axtell, Perry, O	Homestead Carrie	Second.	5 00
Same	Homestead Mariana		
McCormick & Edgerly, Pataskala, O	Dora Mildred		
P. G. Walker, Cecil, Pa	Pearl of Cecil		
Heifer 1 year old and under 2.			
P. G. Walker, Cecil, Pa	Queen of Cecil	First	10 00
L. V. Axtell, Perry O	Homestead Favorite	Second.	5 00
Same	Lilly of Perry		
McCormick & Edgerly, Pataskala, O	Fern K		
Same	Fay's Princess		
Heifer under 1 year.			
L. V. Axtell, Perry, O	Emma Perry	First	5 00
P. G. Walker, Cecil, O	Mary of Cecil	Second.	3 00
Same	Lucy of Cecil		
McCormick & Edgerly, Pataskala, O	Bulie		
Same	Josie		
L. V. Axtell, Perry, O	Homestead Queen		

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
EXHIBITOR'S HERD.			
Bull 2 years old and over with graded herd,			
L. V. Axtell, Perry, O		First	$40 00
McCormick & Edgerly, Pataskala, O			
P. G. Walker, Cecil, Pa			
BREEDER'S HERD.			
Bull 2 years old and under with graded herd.			
L. V. Axtell, Perry, O		First	40 00
McCormick & Edgerly, Pataskala, O			
Four animals of either sex.			
L. V. Axtell Perry, O		First	30 00
McCormick & Edgerly, Pataskala, O			
P. G. Walker, Cecil, Pa			

GEO. C. CAMPBELL, Salem, O.—Expert Judge.

AYRSHIRES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 3 years old and over.			
J. P. Beatty, Pataskala, O	Tallahassa	First	$20 00
Bull 2 years old and under 3.			
Howard Cook, Beloit, O	Leroy Jo Jo	First	20 00
J. P. Beatty, Pataskala, O	Watsika	Second.	10 00
Bull 1 year old and under 2			
J. P. Beatty, Pataskala, O.	Chic	First	10 00
Bull under 1 year.			
J. P. Beatty, Pataskala, O	Hunter	First	5 00
Howard Cook, Beloit, O	King Joe	Second.	3 00
Cow 3 years old or over.			
J. P Beatty, Pataskala, O	Lady Jewess 2d	First	15 00
Howard Cook, Beloit, O	Miss Douglass	Second.	10 00
Same	Little Douglass		
J. P. Beatty, Pataskala, O	Cleopatra		
Cow or heifer 2 years old and under 3.			
Howard Cook, Beloit, O	Pink Daisy	First	10 00
J. P. Beatty, Pataskala, O	Daisy Butterfield 2d	Second	5 00
Same	Kluck 2d		
Heifer 1 year old and under 2.			
J. P. Beatty, Pataskala, O	Lady Jewess 3d	First	10 00
Howard Cook, Beloit, O	Inez Douglas	Second.	5 00
Same	Ivy Nelson		
Same	Lilly Beloit		
J. P. Beatty, Pataskala, O	Hassa 3d		
Heifer under 1 year.			
Howard Cook, Beloit, O	Leah Nelson	First	5 00
J. P. Beatty. Pataskala, O	Winnie	Second.	3 00
Same	Lady Jewess, 4th		

SWEEPSTAKES

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
EXHIBITOR'S HERD.			
Bull 2 years old or over with graded herd.			
Howard Cook, Beloit, O..	Leroy Jo-Jo	First	$40 00
J. P. Beatty, Pataskala O..			
BREEDER'S HERD.			
Bull 2 years old or under with graded herd.			
J. P. Beatty, Pataskala, O..		First	40 00
Four animals of either sex.			
Howard Cook, Beloit, O..		First	30 00
J. P. Beatty, Pataskala, O..			

GEO. C. CAMPBELL, Salem, O.—Expert Judge.

HOLSTEINS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 3 years old and over.			
W. B. Smith & Son, Columbus, O	Clothilde, Netherland Pasha	First	$20 00
John Goddard, Willoughby, O	Scheuling's Consul	Second.	10 00
W. B. Smith & Son, Columbus O	Aggie Beauty		
Bull 2 years old and under 3.			
John E. Goddard and J. A. Beidler, Willoughby, O.	Duke Aggie Pieterton	First	20 00
Bull 1 year old and under 2.			
W. B. Smith & Son, Columbus, O	Reputation	First	10 00
John E. Goddard and J. A. Beidler, Willoughby, O.	Ordella 2nd Paul	Second.	5 00
Bull under 1 year.			
John E. Goddard and J. A. Beidler, Willoughby, O..		First	5 00
Same		Second.	3 00
W. B. Smith & Son, Columbus, O	Slateman's Merades		
Cow 3 years old and over.			
W. B. Smith & Son, Columbus, O	Kate Spray	First	15 00
John E. Goddard and J. A. Beidler, Willoughby, O..	Highland Coreula	Second.	10 00
Same	Ebony 2nd Sylva		
W. B. Smith & Son, Columbus, O	Annual		
Cow 2 years old and under 3.			
W. B. Smith & Son, Columbus, O	Popular	First	10 00
John E. Goddard and J. A. Beidler, Willoughby, O..	Stanley Clothilde Colmia	Second.	5 00
Same	Maggie Scheuling		
W. B. Smith & Son, Columbus, O	Ideal Hildegisela		
Cow or heifer 1 year old and under 2.			
John E. Goddard and J. A. Beidler, Willoughby, O..	Highland of Spring Grove	First	10 00
Same	Ira Anvila 3rd	Second.	5 00
W. B. Smith & Son, Columbus, O	Often repeated		
Same	Matolie's Mercedes 2nd		

HOLSTEINS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Heifer under 1 year.			
John E. Goddard & J. A. Beidler, Willoughby, O.		First	$5 00
Same		Second.	3 00
W. B. Smith & Son, Columbus, O	Never Again		
Same	Told Again		

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
EXHIBITOR'S HERD.			
Bull 2 years old or over with graded herd.			
John E. Goddard & J. A. Beidler. Willoughby, O.		First	$40 00
W. B. Smith & Son, Columbus, O.			
BREEDER'S HERDS.			
Bull 2 years old and under with graded herd.			
John E. Goddard & J. A Beidler. Willoughby, O.		First	40 00
W. B. Smith & Son, Columbus, O			
Four animals of either sex.			
W. B. Smith & Son, Columbus, O		First	30 00

Geo. C. Campbell, Salem, O.—Expert Judge.

ABERDEEN ANGUS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 3 years old and over.			
D. Bradfute & Son, Cedarville, O	Gay Eric	First	$20 00
Bull 1 year old and under 2.			
D. Bradfute & Son, Cedarville, O.	Lewis	First	10 00
Bull under 1 year.			
D. Bradfute & Son, Cedarville, O	Quod of Meadow Brook	First	5 00
Cow 3 years old and over.			
D. Bradfute & Son, Cedarville, O.	Bonita	First	15 00
Same	Lady	Second.	10 00
Cow or heifer 2 years old and under 3.			
D. Bradfute & Son, Cedarville, O.	Lassie 2nd	First	10 00
Same	Marie	Second.	5 00

ABERDEEN ANGUS—Concluded.

Owner's Name and Postoffice,	Name of Animal.	Premium.	Amount.
Heifer 1 year old and under 2.			
D Bradfute & Son, Cedarville, O	Vanity	First	$10 00
Same	Fancy	Second.	5 00
Heifer under 1 year.			
D. Bradfute & Son, Cedarville, O	Violet	First	5 00
Same	Fanny	Second.	3 00

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
EXHIBITOR'S HERD.			
Bull 2 years old and over with graded herd.			
D. Bradfute & Son, Cedarville, O		First	$40 00
BREEDER'S HERD.			
Bull under 2 years old with graded herd.			
D. Bradfute & Son, Cedarville, O		First	40 00
Four animals of either sex.			
D. Bradfute & Son, Cedarville, O		First	30 00

S. P SISSON, Wheeling, W. Va.—Expert Judge.

GALLOWAYS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount
Bull 3 years old and over.			
T. J. Davis & Son, Triumph, Ill		First	$20 00
Bull 1 year old and under 2.			
T. J. Davis & Son, Triumph, Ill		First	10 00
Bull under 1 year.			
T. J. Davis & Son, Triumph, Ill		First	5 00
Same		Second.	3 00
Cow 3 years old and over.			
T. J. Davis & Son, Triumph, Ill		First	15 00
Same		Second.	10 00
Cow or heifer 2 years old and under 3.			
T. J. Davis & Son, Triumph, Ill		First	10 00

GALLOWAYS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Heifer 1 year old and under 2.			
T. J. Davis & Son, Triumph, Ill		First	$10 00
Same		Second.	5 00
Heifer under 1 year.			
T. J. Davis & Son, Triumph, Ill		First	5 00
Same		Second.	3 00

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
EXHIBITOR'S HERD.			
Bull 2 years old and over with graded herd.			
T. J. Davis & Son, Triumph, Ill		First	$40 00
BREEDER'S HERD.			
Bull 2 years old and under with graded herd.			
T. J. Davis & Son, Triumph, Ill		First	40 00
Four amimals of either sex.			
T. J. Davis & Son, Triumph, Ill		First	30 00

GEO. C. CAMPBELL, Salem, O.—Expert Judge.

RED POLLS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 3 years old and over.			
Andrew & Bros., Cedarville, O	Gov. Bradley	First	$20 00
Bull 2 years old and under 3.			
Andrew & Bros., Cedarville, O	Prince	First	20 00
Bull 1 year old and under 2.			
Andrew & Bros., Cedarville, O	Dutch	First	10 00
Bull under 1 year.			
Andrew & Bros., Cedarville, O.	Madock	First	5 00
Cow 3 years old and over.			
Andrew & Bros., Cedarville, O	Nancetti	First	15 00
Same	Carry	Second.	10 00

RED POLLS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Cow or heifer 2 years old and under 3.			
Andrew & Bros., Cedarville, O.	Beauty of Cedarville 3d	First	$10 00
Same	Beauty of Cedarville 2d	Second	5 00
Heifer 1 year old and under 2.			
Andrew & Bros., Cedarville, O.	Beauty of Cedarville 4th	First	10 00
Same	Mary	Second	5 00
Heifer under 1 year.			
Andrew & Bros., Cedarville, O.		First	5 00
Same		Second	3 00

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
EXHIBITOR'S HERD.			
Bull 2 years old and over with graded herd.			
Andrew & Bros , Cedarville, O.		First	$40 00
BREEDER'S HERD.			
Bull 2 years old or under with graded herd.			
Andrew & Bros., Cedarville, O.		First	40 00
Four animals of either sex.			
Andrew & Bros., Cedarville, O.		First	30 00

S. P. SISSON, Wheeling, W. Va.—Expert Judge.

POLLED DURHAMS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 3 years old and over.			
Wm. Clark, Kunkle, O.	Hoosier Boy	First	$20 00
Beam & Bogart, Columbus Grove, O.	Gay Monarch	Second	10 00
Wm. Tossey, Watkins, O.	Hamilton Boy		
Bull 1 year old and under 2.			
Wm. Tossey, Watkins, O.	Dick S	First	10 00
Bull under 1 year.			
Beam & Bogart, Columbus Grove, O.	Plum Creek Athelstaine	First	5 00
Wm. Clark, Kunkle, O.	New Year's Boy	Second	3 00
Beam & Bogart, Columbus Grove, O.	Plum Creek Hustler		
Wm. Tossey, Watkins, O.	Cinton C.		
Same	Dewey		

POLLED DURHAMS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Cow 3 years old and over.			
Wm. Tossey, Watkins, O	Allie	First	$15 00
Beam & Bogart, Columbus Grove O	Lilly Langtry 3d	Second.	10 00
Same	Dora		
Wm. Clark, Kunkle, O.	Bessie Sherman		
Wm. Tossey, Watkins, O	Pansy		
Cow or heifer 2 years old and under 3.			
Wm. Tossey, Watkins, O	Beauty	First	10 00
Wm Clark, Kunkle, O.	Bessie Sherman 3d.	Second.	5 00
Same	" 4th		
Beam & Bogart, Columbus Grove, O	Plum Creek Cambria		
Same	Plum Creek Beauty		
Heifer 1 year old and under 2.			
Wm. Tossey, Watkins, O	Daisy	First	10 00
Wm. Clark, Kunkle, O.	Blossom	Second.	5 00
Same	Bessie Sherman 8th		
Wm. Tossey, Watkins, O	Sallie		
Beam & Bogart, Columbus Grove, O	Plum Creek Blossie		
Same	" Ionan		
Heifer 1 year old and under.			
Beam & Bogart, Columbus Grove, O	Plum Creek Lorena	First	5 00
Wm. Clark, Kunkle, O.	Bessie Sherman, 9th	Second.	3 00
Same	Easter Lady		
Beam & Bogart, Columbus Grove, O			
Wm. Tossey, Watkins, O	Violet		
Same	Red Cherry		

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
EXHIBITOR'S HERD.			
Bull 2 years old and over with graded herd.			
Wm. Tossey, Watkins, O		First	$40 00
Beam & Bogart, Columbus Grove, O			
Wm. Clark, Kunkle, O.			
BREEDER'S HERD.			
Bull 2 years old and under with graded herd.			
Beam & Bogart, Columbus Grove, O		First	40 00
Wm. Clark, Kunkle O.			
Wm. Tossey, Watkins, O.			
Four animals of either sex.			
Wm. Tossey, Watkins, O		First	30 00
Wm. Clark, Kunkle, O.			

L. P. SISSON, Wheeling, W. Va.—Expert Judge.

GRAND SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
DAIRY BREEDS.			
Herd of one bull and four cows or heifers			
J. E. Robbins, Greensburg, Ind		First	Silver cup.
John E. Goddard, Willoughby, O			
J. P. Beatty, Pataskala, O			
McCormick & Edgerly, Pataskala, O			
W. B. Smith & Son, Columbus, O			
P. G. Walker, Cecil, Pa			
W. H. O. Goist, Girard, O			
L. V. Axtell, Perry, O			
Bull 2 years old or over.			
J. E. Goddard, Willoughby, O	Duke Agie	First	Medal.
Howard Cook, Beloit, O	Leroy Jo Jo		
J. P. Beatty Pataskala, O			
McCormick & Edgerly, Pataskala, O			
W. B. Smith & Son, Columbus, O			
James R. Orr, Cedarville, O			
J. E. Robbins, Greensburg, Ind	Czar Cormarrie		
P. G. Walker, Cecil, Pa			
W. H. O. Goist, Girard, O			
L. V. Axtell, Perry, O			
Bull under 2 years.			
W. H. O. Goist, Girard, O	City Grove St. Lambert	First	Medal.
L. V. Axtell, Perry, O			
J. P. Beatty, Pataskala, O			
McCormick & Edgerly, Pataskala, O			
W. B. Smith & Son, Columbus, O			
James R. Orr, Cedarville, O			
J. E. Robbins, Greensburg, Ind	E. Marion		
Same	Constance Lad		
P. G. Walker, Cecil, Pa			
Cow 2 years old or over.			
J. E. Robbins, Greensburg, Ind	Pearl Penrie	First	Medal.
Howard Cook, Beloit, O	Little Douglass		
J. P. Beatty, Pataskala, O			
McCormick & Edgerly, Pataskala, O			
W. B. Smith & Son, Columbus, O			
J. E. Robbins, Greensburg, Ind	King's Fancy Nenita		
P. G. Walker, Cecil, Pa			
W. H. O. Goist, Girard, O			
L. V. Axtell, Perry, O			
Cow under 2 years.			
L. V. Axtell, Perry, O		First	Medal.
J. P. Beatty, Pataskala, O			
McCormick & Edgerly, Pataskala, O			
W. B. Smith & Son, Columbus, O			
James R. Orr, Cedarville, O			
J. E. Robbins, Greensburg, Ind			
Same			
P. G. Walker, Cecil, Pa			
W. H. O. Goist, Girard, O			

W. D. CROUT, Wauseon, O.; ALBERT BROWN, Warren, O.; GEO. C. CAMPBELL, Salem, O.—Expert Judges.

GRAND SWEEPSTAKES—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
BEEF BREEDS			
AGED HERD.*			
Bull and graded herd.			
Aaron Barber, Avon, N. Y		First	S. Cup
Murray Boocock, Kiswick, Va	Salsbury		
H. P. Fry, Bettsville, O			
D. Bradfute & Son, Cedarville, O			
T. J. Davis & Son, Triumph, Ill			
C. L. Gerlaugh, Osborne, O			
YOUNG HERD.			
Bull and four heifers under 2 years.			
D. Bradfute & Son, Cedarville, O		First	S. Cup
H. P. Fry, Bettsville, O			
Aaron Barber, Avon, N. Y			
Wm. Clark, Kunkle, O			
T. J. Davis & Son, Triumph, Ill			
Bull 2 years old and over.			
J. A. Gerlaugh, Harshman, O		First	Medal.
H. P. Fry, Bettsville, O			
D. Bradfute & Son, Cedarville, O	Gay Eric		
Aaron Barber, Avon, N. Y			
William Clark, Kunkle, O			
T. J. Davis & Son, Triumph, Ill			
C. L. Gerlaugh, Osborne, O			
H. H. Curtice, Eminence, Ky	Beau Donald		
Bull under 2 years.			
J. A. Gerlaugh, Harshman, O		First	Medal.
H. P. Fry, Bettsville, O			
D. Bradfute & Son, Cedarville, O	Quod		
Aaron Barber, Avon, N. Y			
Wm. Clark, Kunkle, O			
T. J. Davis & Son, Triumph, Ill			
C. L. Gerlaugh, Osborne, O			
Cow 2 years old or over.			
Aaron Barber, Avon, N. Y		First	Medal.
H. P. Fry, Bettsville, O			
D. Bradfute & Son, Cedarville, O	Lady		
Same	Lassie		
T. J. Davis & Son, Triumph, Ill			
C. L. Gerlaugh, Osborne, O			
J. A. Gerlaugh, Harshman, O			
Female under 2 years.			
D. Bradfute & Son, Cedarville, O	Fancy	First	Medal.
Same	Fanny		
H. P. Fry, Bettsville, O			
Aaron Barber, Avon, N. Y			
Wm. Clark, Kunkle, O			
T. J. Davis & Son, Triumph, Ill			
C. L. Gerlaugh, Osborne, O			
W. H. Curtice, Eminence, Ky	Early Princess		
J. A. Gerlaugh, Harshman, O			

W. D. CROUT, Wauseon, O.; JOHN MONTGOMERY, Granville, O.; ALBERT BROWN, Warren, O.—Expert Judges.

OHIO STATE DAIRY TEST

By State Board of Agriculture and Ohio Agricultural Experiment Station.

For nine consecutive years a state dairy test was conducted which was open to all breeds under equal conditions. During all these years the Holstein breeders entered more cows than all other breeders within the state. At the close of the ninth year an effort was made to so arrange the schedule of awards as to induce all the owners of dairy breeds to enter for competition. To this end a class was provided for each of the dairy breeds, as follows: For the largest yield of butter fat from twenty-four hours' milk taken from the cow at two or three milkings, at the option of the owner, the same day and determined by chemical analysis of samples taken by the tester from the Experiment Station, the cow having been milked out clean by the tester the evening before the test.

A first and second premium for largest yield of fat, and a first and second premium for largest yield of solids not fat, for Jerseys, Guernseys, Shorthorns, Red Polled, Ayrshires, Holsteins, or any other milk breed.

This liberal offer was calculated to bring into the show ring at the State Fair a representation of all dairy breeds such as is seldom seen together, and it was anticipated that some of the best individuals of the several breeds would be there in competition for honors and a standing.

There was also a championship class provided for the cow of any breed making the largest amount of butter fat and largest amount of solids not fat, in the above test.

In addition to the above a grand sweepstakes class was provided for any herd of five cows tested at one time belonging to one herd and owned by one breeder, producing the largest amount of butter fat and largest amount of solids not fat, within twenty-four hours, in accordance with the conditions of the test.

With such ample provision for all the breeds and such a fine chance for honors over all others it seems very strange indeed that one breed should be permitted to take all premiums. As may be noted in the following table, all animals entered were Holsteins. All were animals of merit, as the figures clearly show, and other breeders must have dreamed of battles fought and victories won until they were persuaded that it was not worth while to enter if they did not possess a white and black cow. Be the cause what it may the evidence, as indicated by the entries, shows that silence or inaction gives consent that the one breed has capabilities that few if any care to compete with.

The table given below gives all animals entered for 1898, the name, breed, age, date last calf was born, date of test, total yield of milk, per cent. of butter fat, per cent. solids not fat, total per cent. solids, total pounds fat and total pounds solids not fat.

OHIO STATE DAIRY TEST, 1898.

Name of cow.	Breed.	Age.	Birth of last calf.	Date of last test.	Total yield of milk, pounds.	Per cent. fat.	Per cent. solids not fat.	Total per cent. solids.	Total pounds fat.	Total pounds solids not fat.
Mattie Maid...........	Holstein	6 years..	Dec. 15, '97.	Jan. 6, '98....	58,125	04.0	08.36	12.36	2,325	4,859
Matalias Mercedes.	"	7 " ..	Dec. 9, '97.	"	66,562	03.2	08.10	11.30	2,130	5.391
Dulcina 2nd	"	11 " ..	June 29, '98.	July 29, '98...	51,110	02.8	08.57	11.37	1,447	4,432
Peterina 2nd..	"	10 " ..	June 14, '98.	" ...	50,130	02.6	07.94	10.54	1,321	4,037
Gretta Thorne 3d....	"	5 " ..	July 15, '98.	" ...	45,070	03.1	08.73	11.83	1,408	3,966
Kate Spray............	"	6 " ..	July 23, '98.	" ...	51,070	02.5	08.55	11.05	1,280	4.400
Langtry 4th	"	6 " ..	June 11, '98.	" ...	53,020	02.9	07.76	10.66	1,540	4,122
Popular	"	2½ " ..	June 18, '98.	" ...	44,030	02.8	08.18	10.98	1,237	3,616
Averages	....	....	....	....	52 377	02.99	08.27	11.28	1.586	4.35

Reviewing the table we glean the following facts, that Mattie Maid takes first prize for largest amount of butter fat—nearly two and one-half pounds ; Matalias Mercedes comes in for second prize on largest amount of butter fat with a product of 2.13 pounds. For the largest yield of solids not including butter fat these cows reverse positions. Matalias Mercedes with a product of 5.39 pounds takes first prize and Mattie Maid with a product of 4.85 pounds takes second prize. These are both superior animals and both owned by W. B. Smith & Son, Columbus, Ohio.

There was no championship award as there were no entries made especially for it.

In the grand sweepstakes class, five cows, ranging in age from five to eleven years, owned by W. B. Smith & Son, carried off the herd prize with a total of 6.99 pounds of fat on an average of 1.39 pounds each per day. They produced 20.957 pounds solids not fat, or an average of 4.19 pounds each per day. The grand sweepstakes cow producing greatest amount of butter fat was Langtry 4th, with a product of 1.54 pounds. Cow producing greatest amount of solids not fat, Dulcina 2nd with a yield of 4.43 pounds. The cow producing greatest amount of milk analyzing not less than 3 per cent. butter fat was Gretta Thorne 3rd with 45.07 pounds analyzing 3.1 per cent. butter fat, all owned by W. B. Smith & Son.

These tests like those of former years have been made at the home of the cows and have been personally superintended by a representative from the Experiment Station, who makes no charges for his time. By this method Ohio gives an opportunity to breeders of dairy cows that has no equal in any state of the union. The changes in classification for the last year makes it possible for every dairy breed to win something and it should be the pride of every association, and every breed, to be represented in a cause, which if properly conducted, cannot fail to give character and standing to the breeders who take advantage of the opportunity.

Respectfully submitted,

J. FREMONT HICKMAN,

Tester.

SPECIAL OFFERS BY THE AMERICAN HEREFORD CATTLE BREEDERS' ASSOCIATION.

Under the offers of the above Association, the following awards were made:

W. H. Curtice, Eminence, Ky.		
Bull 3 years and over, "Beau Donald"	First premium,	$7 00
M. Boocock, Keswick, Va.		
Bull 2 years and under 3, "Salisbury."	"	7 00
W. H. Curtice, Eminence, Ky.		
Bull under 1 year, "Joe Perry 5th."	"	6 00
M. Boocock, Keswick, Va.		
Cow 3 years and over, "Curly Lady."	"	7 00
M. Boocock, Keswick, Va.		
Cow 3 years and over, "Shadeland Lorna."	Second premium,	4 00
M. Boocock, Keswick, Va.		
Heifer 1 year and under 2, "Princess Oliver."	"	6 00
W. H. Curtice, Eminence, Ky.		
Heifer under 1 year, "Early Princess 4th."	"	6 00
M. Boocock, Keswick, Va.		
Heifer under 1 year, "Mistress Peerless Wilson."	Second premium,	4 00

SPECIAL OFFERS BY THE AMERICAN SHORT HORN BREEDERS' ASSOCIATION.

Aged herd in the grand sweepstakes, all breeds competing, premium $35, awarded to Aaron Barber, of Avon, New York, on his herd of Short Horns; and to same party, premium of $10 for Short Horn cow 2 years old or over, in competition with other breeds.

J. A. Gerlaugh, of Harshman, O., was awarded for

Bull 2 years old or over	$10 00
Bull under 1 year	10 00

SPECIAL OFFERS BY THE AMERICAN ABERDEEN-ANGUS BREEDERS' ASSOCIATION.

Under the offers of the above association, Messrs. D. Bradfute & Son, of Cedarville, O., were awarded a premium of $100 for young herd of Aberdeen-Angus cattle, in the class of grand sweepstakes for all breeds showing in competition with other breeds.

D. Bradfute & Son were also awarded a premium of $10 for female under 2 years of age.

SHEEP—G. LIGGETT, Member in Charge.

MERINOS.

Owner's Name and Postoffice	Name of Animal.	Premium.	Amount.
Ram 2 years old or over.			
E. Campbell & Son, Pittsfield, O		First	$10 00
J. Lovette & Son. Quincy, O	McKinley	Second	5 00
O. Watkins, Maynard, O			
F. W. Perkins, West Mansfield, O			
Geo. Allen, Allerton, Ill.			
J. M. Flanagan, Niles, O	Sampson		
J. Lovette & Son. Quincy, O	King		
S. Blamer & Son, Johnstown, O			
R. D. Williamson, Xenia, O			
S. Blamer & Son, Johnstown, O			
Ram 1 year old and under 2.			
S. Blamer & Son, Johnstown, O		First	10 00
J. Lovette & Son, Quincy, O		Second	5 00
O. Watkins, Maynard, O			
Same			
F. W. Perkins West Mansfield, O.			
Same			
E. Campbell & Son, Pittsfield, O			
J. M. Flanagan, Niles, O	Silver Fleece No. 2		
Same	Gold Standard		
S. Blamer & Son, Johnstown, O			
R. D. Williamson, Xenia, O			
Wilson Bros., Fredricktown, O			
S. Blamer & Son, Johnstown, O.			
Ram under 1 year.			
S. Blamer & Son, Johnstown, O		First	5 00
O. Watkins, Maynard, O		Second.	3 00
Same			
F. W. Perkins, West Mansfield, O			
A. T. Gamber, Wakeman, O	Ohio Boy 2d		
J. M. Flanagan, Niles, O			
R. D. Williamson Xenia, O			
Same			
S. Blamer & Son, Johnstown, O			
Ewe 2 years old and over.			
S. Blamer & Son, Johnstown, O		First	10 00
J. Lovette & Son. Quincy, O	Queen	Second	5 00
O. Watkins, Maynard, O			
Same			
F. W. Perkins, West Mansfield, O			
Geo. Allen, Allerton, Ill			
J. M. Flanagan, Niles, O			
Same			
O. Watkins, Maynard, O			
S. Blamer & Son, Johnstown, O			
R. D. Williamson, Xenia, O			
S. Blamer & Son, Johnstown, O			
Ewe 1 year old and under 2.			
R. D Williamson, Xenia, O		First	10 00
F. W. Perkins, West Mansfield, O		Second	5 00
Same			
O. Watkins, Maynard O			
J. M. Flanagan, Niles, O.			
J. Lovette & Son, Quincy, O			
S. Blamer & Son, Johnstown, O.			
Same			
Ewe under 1 year.			
S. Blamer & Son, Johnstown O		First	5 00
J. Lovette & Son, Quincy, O.		Second	3 00
O. Watkins Maynard, O			
Same			
F. W. Perkins, West Mansfield, O			
J. M. Flanagan, Niles, O			
S. Blamer & Son, Johnstown, O			
R. D. Williamson, Xenia, O			
Same			
S. Blamer & Son, Johnstown, O.			

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Flock.			
S. Blamer & Son. Johnstown, O		First	$15 00
O. Watkins, Maynard, O			
F. W. Perkins, West Mansfield, O			
J. M. Flanagan, Niles, O			
J. Lovette & Son, Quincy, O			
R. D. Williamson, Xenia, O			
S. Blamer & Son, Johnstown, O			
Pen of four lambs.			
O. Watkins, Maynard, O		First	15 00
J. M. Flanagan, Niles, O			
F. W. Perkins, West Mansfield, O			
R. D. Williamson, Xenia, O			

GEO. S. THOMAS, Greenwich, O.—Judge.

DELAINE MERINOS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ram 2 years old or over.			
C. S. Chapman & Son, Marysville, O	Key Stone, Jr	First	$10 00
A. T. Gamber, Wakeman, O	Victor	Second	5 00
Same	Ohio Boy		
W. P. Penry & Bro., Radnor, O			
J. M. Flanagan, Niles, O			
Same			
C. H. Williams, Church, Mich			
R. D. Williamson, Xenia, O			
Wilson Bros., Fredricktown, O			
Same			
Ram 1 year old and under 2.			
A. T. Gamber, Wakeman, O	Young Keystone	First	10 00
Same	Victor	Second	5 00
O. Watkins, Maynard, O			
Same			
C. S. Chapman & Son, Marysville, O			
Same			
F. W. Perkins, West Mansfield, O			
W. P. Penry & Bro., Radnor, O			
J. M. Flanagan, Niles, O			
C. H. Williams, Church Mich			
R. D. Williamson, Xenia, O			
Wilson Bros., Fredricktown, O			
Same			
C. H. Williams, Church, Mich			
Ram under 1 year.			
A. T. Gamber, Wakeman, O	Prince	First	5 00
Same	Bonner	Second	3 00
C. S. Chapman & Son, Marysville, O			
Same			
J. M. Flanagan, Niles, O			
C. H. Williams, Church, Mich			
A. T. Gamber, Wakeman, O			
J. M. Flanagan, Niles, O			
C. H. Williams, Church, Mich			
R. D. Williamson, Xenia, O			
Wilson Bros., Fredricktown, O			

DELAINE MERINOS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ewe 2 years old or over.			
A. T. Gamber, Wakeman, O.	Pride	First.	$10 00
C. S. Chapman & Son, Marysville, O.		Second.	5 00
O. Watkins, Maynard, O.			
C. S. Chapman & Son, Marysville, O.			
A. T. Gamber, Wakeman, O.	Model		
W. P. Penry & Bro., Radnor, O.			
J. M. Flanagan, Niles, O.			
Same			
C. H. Williams, Church, Mich.			
R. D. Williamson, Xenia, O.			
Same			
Ewe 1 year old and under 2.			
A. T. Gamber, Wakeman, O.	Bess	First.	10 00
Same	Pet	Second.	5 00
O. Watkins, Maynard, O.			
C. S. Chapman & Son, Marysville, O.			
Same			
W. P. Penry & Bro., Radnor, O.			
J. M. Flanagan, Niles, O.			
Same			
C. H. Williams, Church, Mich.			
R. D. Williamson, Xenia, O.			
Wilson Bros., Fredericktown, O.			
Same			
Ewe under 1 year.			
Wilson Bros., Fredericktown, O.		First.	5 00
C. S. Chapman & Son, Marysville, O.		Second.	3 00
O. Watkins, Maynard, O.			
Same			
C. S. Chapman & Son, Marysville, O.			
A. T. Gamber, Wakeman, O.	Daisy		
Same			
W. P. Penry & Bro., Radnor, O.			
J. M. Flanagan, Niles, O.			
C. H. Williams, Church, Mich.			
R. D. Williamson, Xenia, O.			

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Flock.			
A. T. Gamber, Wakeman, O.		First.	$15 00
C. S. Chapman & Son, Marysville, O.			
J. M. Flanagan, Niles, O.			
C. H. Williams, Church, Mich.			
Wilson Bros., Fredericktown, O.			
Pen of four lambs.			
A. T. Gamber, Wakeman, O.		First.	15 00
C. S. Chapman & Son, Marysville, O.			
C. H. Williams, Church, Mich.			

JOHN C. PARKISON, JR., Rushsylvania, O.—Judge.

French Merinos—Rambouillet.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ram 2 years old or over.			
D. Lincoln, Milford Center, O.		First	$10 00
A. A. Bates Irwin, O		Second	5 00
Same			
D. Lincoln, Milford Center, O.			
Ram 1 year old and under 2.			
A. A. Bates, Irwin, O.		First	10 00
D. Lincoln, Milford Center, O.		Second	5 00
A. A. Bates, Irwin, O			
D. Lincoln, Milford Center, O.			
Ram under 1 year.			
A. A. Bates, Irwin, O		First	5 00
Same		Second	3 00
D. Lincoln, Milford Center, O.			
Same			
Ewe 2 years old or over.			
D. Lincoln, Milford Center, O.		First	10 00
A. A. Bates, Irwin, O.		Second	5 00
Same			
D. Lincoln, Milford Center, O.			
Same			
Ewe 1 year old and under 2.			
A. A. Bates, Irwin, O		First	10 00
Same		Second	5 00
D. Lincoln, Milford Center, O.			
Ewe under 1 year.			
A. A. Bates, Irwin, O		First	5 00
D. Lincoln, Milford Center, O.		Second	3 00
A. A. Bates. Irwin, O.			
D. Lincoln, Milford Center, O.			

Sweepstakes.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Flock.			
D. Lincoln, Milford Center, O.		First	$15 00
A. A. Bates, Irwin, O.			
Pen of four lambs.			
A. A. Bates, Irwin. O		First	15 00
D. Lincoln, Milford Center, O.			

G. J. Campbell, Pittsfield, O.—Judge.

LONG WOOLS.

To include Cotswolds and Leicesters.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ram 2 years old and over.			
Wilson Bros., Muncie, Ind		First	$10 00
D. B. Watt & Son, Xenia, O		Second.	5 00
S. G. Millard, Huntsburg, O	Quills 1160		
Ram 1 year old and under 2.			
Wilson Bros., Muncie, Ind		First	10 00
D. B. Watt & Son, Xenia, O		Second.	5 00
Same			
S. G. Millard, Huntsburg, O	Quills 89		
Ram under 1 year.			
J. H. Woodford, Paris, Ky		First.	5 00
S. G. Millard, Huntsburg, O		Second.	3 00
John Andregg, Basil, O			
D. B. Watt & Son, Xenia, O			
J. H. Woodford, Paris, Ky			
Ewe 2 years old and over.			
S. G. Millard, Huntsburg, O	Millards 60	First	10 00
Wilson Bros., Muncie, Ind		Second.	5 00
Same			
S. G. Millard, Huntsburg, O			
D. B. Watt & Son, Xenia, O			
Same			
Ewe 1 year old and under 2.			
S. G. Millard Huntsburg, O		First	10 00
D. B. Watt & Son, Xenia, O		Second.	5 00
John Andregg, Basil, O			
S. G. Millard, Huntsburg, O			
Wilson Bros., Muncie, Ind			
Same			
Ewe under 1 year.			
S. G. Millard, Huntsburg, O		First	5 00
Wilson Bros., Muncie, Ind		Second.	3 00
S. G. Millard, Huntsburg, O			
D. B. Watt & Son, Xenia, O			
J. H. Woodford, Paris, Ky			
Same			

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Flock.			
Wilson Bros., Muncie, Ind		First	$15 00
D. B. Watt & Son, Xenia, O			
S. G. Millard, Huntsburg, O			
Pen of four lambs.			
J. H. Woodford, Paris, Ky		First	15 00
S. G. Millard, Huntsburg, O			

JOHN L. THOMPSON, Gas City, Ind.—Judge.

OXFORD DOWNS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ram 2 years old or over.			
J. C. Williamson, Xenia, O.	Sir Percy	First	$10 00
John Andregg, Basil, O.		Second.	5 00
Same			
Heskett Bros, Fulton, O.	Brassey		
R. J Stone, Stonington, Ill			
Same			
Ram 1 year old and under 2			
R. J. Stone, Stonington, Ill		First	10 00
J. C. Williamson, Xenia, O	Lord Banbury	Second	5 00
Heskett Bros., Fulton, O.	McKenzie		
John Andregg, Basil, O.			
Ram under 1 year.			
R. J. Stone, Stonington, Ill		First	5 00
Heskett Bros., Fulton, O.	Dewey	Second.	3 00
John Andregg, Basil, O			
E. Campbell & Son, Pittsfield, O.			
J. C. Williamson, Xenia, O.	Williamson's 155		
R. J. Stone, Stonington, Ill			
Ewe 2 years old or over.			
J. C. Williamson, Xenia, O.		First	10 00
R. J. Stone, Stonington, Ill		Second.	5 00
John Andregg, Basil, O			
Same			
J. C. Williamson, Xenia, O.			
Heskett Bros., Fulton, O.	Winsodom of 92		
R. J. Stone, Stonington, Ill.			
Ewe 1 year old and under 2.			
R. J. Stone, Stonington, Ill		First	10 00
Same		Second.	5 00
John Andregg, Basil, O.			
E Campbell & Son, Pittsfield, O.			
J. C. Williamson, Xenia, O.			
Same			
Heskett Bros., Fulton, O.	Miss Sampson		
Ewe under 1 year.			
R J. Stone, Stonington, Ill.		First	5 00
Heskett Bros., Fulton, O.	Miss Sampson 2d	Second.	3 00
John Andregg, Basil, O			
E. Campbell & Son, Pittsfield, O.			
J. C. Williamson, Xenia, O.			
R. J. Stone, Stonington, Ill.			

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Flock.			
R. J. Stone, Stonington, Ill.		First	$15 00
John Andregg, Basil, O			
J. C. Williamson Xenia, O.			

SWEEPSTAKES—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Pen of four lambs.			
R. J. Stone, Stonington, Ill		First	$15 00
John Andregg, Basil, O			
J. C. Williamson, Xenia, O			
Heskett Bros., Fulton, O			

JOHN L. THOMPSON, Gas City, Ind.—Expert Judge.

SHROPSHIRE DOWNS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ram 2 years old and over.			
Geo. Allen, Allerton, Ill		First	$10 00
J. Billman & Sons, Sullivan, Ind		Second.	5 00
Same			
Geo. Allen, Allerton, Ill			
John Andregg, Basil, O			
H. W. Chaffee, Brecksville, O.			
Ram 1 year old and under 2.			
Geo. Allen, Allerton, Ill		First	10 00
Same		Second.	5 00
H. W. Chaffee, Brecksville, O			
Same			
J. Billman & Sons, Sullivan, Ind			
Same			
Ram under 1 year.			
Geo. Allen, Allerton, Ill		First	5 00
Same		Second.	3 00
H. W. Chaffee, Brecksville, O			
Same			
C. W. O'Harra, Galloway, O			
J. Billman & Sons, Sullivan, Ind			
Same			
Ewe 2 years old and over.			
Geo. Allen, Allerton, Ill		First	10 00
H. W. Chaffee, Brecksville, O		Second.	5 00
Same			
Geo. Allen Allerton, Ill			
T. W. Davison, Mechanicsburg, O			
J. Billman & Sons, Sullivan, Ind			
Same			
Ewe 1 year old and under 2.			
Geo. Allen, Allerton, Ill		First	10 00
Same		Second.	5 00
John Andregg, Basil, O			
H. W. Chaffee, Brecksville, O			
Same			
T. W. Davison, Mechanicsburg, O			
J. Billman & Sons, Sullivan, Ind			
Same			
Ewe under 1 year.			
Geo. Allen, Allerton, Ill		First	5 00
Same		Second.	3 00
H. W. Chaffee, Brecksville, O			
C. W. O'Harra, Galloway, O			
T. W. Davison Mechanicsburg, O			
J. Billman & Sons, Sullivan, Ind			
Same			

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Flock.			
Geo. Allen, Allerton, Ill		First	$15 00
H. W. Chaffee, Brecksville, O			
J. Billman & Sons, Sullivan, Ind			
Pen of four lambs.			
Geo. Allen, Allerton, Ill		First	15 00
H. W. Chaffee, Brecksville, O			
T. W. Davison, Mechanicsburg, O			
J. Billman & Sons, Sullivan Ind			

JOHN L. THOMPSON, Gas City, Ind.—Judge.

HAMPSHIRE DOWNS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ram 2 years old or over.			
Scarff & Artz, New Carlisle, O		First	$10 00
Same		Second.	5 00
Ram 1 year old and under 2.			
Scarff & Artz, New Carlisle, O		First	10 00
Same		Second.	5 00
Ram under 1 year.			
John Milton, Marshall, Mich		First	5 00
Scarff & Artz, New Carlisle, O		Second.	3 00
Same			
Ewe 2 years old and over.			
Scarff & Artz, New Carlisle, O		First	10 00
Geo. Allen, Allerton, Ill		Second.	5 00
Scarff & Artz, New Carlisle, O			
John Milton, Marshall, Mich			
Ewe 1 year old and under 2.			
Scarff & Artz, New Carlisle, O		First	10 00
John Milton, Marshall, Mich		Second.	5 00
Scarff & Artz, New Carlisle, O			
Ewe under 1 year.			
John Milton, Marshall, Mich		First	5 00
Scarff & Artz, New Carlisle, O		Second.	3 00
Same			

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Flock.			
Scarff & Artz, New Carlisle, O		First	$15 00
John Milton, Marshall, Mich			
Pen of four lambs.			
Scarff & Artz. New Carlisle, O		First	15 00

John L. Thompson, Gas City, Ind.—Judge.

SOUTH DOWNS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ram 2 years old or over.			
R. C. Watt, Xenia, O		First	$10 00
George Allen, Allerton, Ill		Second.	5 00
E. Campbell & Son, Pittsfield, O			
C. C. Shaw & Son, Newark, O	Shaw 75		
W. H Compton, Monroe, O	Privett 351		
Same	Dandy C		
Ram 1 year old and under 2.			
George Allen, Allerton, Ill		First	10 00
W. H. Compton, Monroe, O	W. H. C., 65	Second.	5 00
E. Campbell & Son, Pittsfield, O			
C. C. Shaw & Son, Newark, O	Shaw 139		
Same	Shaw 147		
R. C. Watt, Xenia, O			
W. H. Compton, Monroe, O	Valley King		
Ram under 1 year.			
C. C. Shaw & Son, Newark, O	Shaw 176	First	5 00
E. Campbell & Son, Pittsfield, O		Second.	3 00
C. C. Shaw & Son, Newark, O	Shaw 179		
The Pagain Harbour Co., Selsey, Sussex, Eng			
Same			
R. C. Watt, Xenia, O			
Same			
W. H. Compton, Monroe, O	W. H. C., 75		
Same	W. H. C., 87		
Ewe 2 years old and over.			
George Allen, Allerton, Ill		First	10 00
E. Campbell & Son, Pittsfield, O		Second.	5 00
Same			
C. C. Shaw & Son, Newark, O	Shaw 101		
Same	Shaw 126		
R. C. Watt, Xenia, O			
Same			
W. H. Compton, Monroe, O	G. J. H., 488		
Same	C., 52		
Ewe 1 year and under 2.			
George Allen, Allerton, Ill		First	10 00
E. Campbell & Son, Pittsfield, O		Second.	5 00
Same			
C. C. Shaw & Son, Newark, O	Shaw 141		
Same	Shaw 148		
R. C. Watt, Xenia, O			
Same			
W. H. Compton, Monroe, O	C., 68		

SOUTH DOWNS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ewe under 1 year.			
The Pagain Harbour Co., Selsey, Sussex, Eng.		First.	$5 00
C. C. Shaw & Son, Newark, O.	Shaw 174	Second.	3 00
Same	Shaw 175		
The Pagain Harbour Co., Selsey, Sussex, Eng.			
R. C. Watt, Xenia, O.			
Same	C., 82		
W. H. Compton, Monroe, O.			

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Flock.			
R. C. Watt, Xenia, O		First.	$15 00
C. C. Shaw & Son, Newark, O.			
Geo. Allen Allerton, Ili.			
W. H. Compton, Monroe, O			
Pen of four lambs.			
C. C. Shaw & Son, Newark, O.		First.	15 00
The Pagain Harbour Co., Selsey, Sussex, Eng.			
R. C. Watt, Xenia, O.			
W. H. Compton, Monroe, O.			

JOHN L. THOMPSON, Gas City, Ind.—Judge.

LINCOLNS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ram 2 years old or over.			
J. R. Bickett, Xenia, O	Scopnick	First.	$10 00
Ram 1 year old and under 2			
J. R. Bickett, Xenia, O.	Windsor	First.	10 00
Ram under 1 year.			
J. R. Bickett, Xenia, O.		First.	5 00
Ewe 2 years old or over.			
J. R. Bickett, Xenia, O.	Queen	First.	10 00
Same	Lady Carrie	Second.	5 00
Ewe 1 year old and under 2.			
J. R. Bickett, Xenia, O	Daisy 2	First.	10 00
Same	Olive	Second.	5 00
Ewe under 1 year.			
J. R. Bickett Xenia, O.		First.	5 00
Same		Second.	3 00

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Flock.			
J. R Bickett, Xenia, O		First	$15 00

JOHN L. THOMPSON, Gas City, Ind.—Judge.

DORSET HORNED.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ram 2 years old or over.			
J. L. Henderson & Son, Washington, Pa	Locust Grove 15	First	$10 00
Same	Locust Grove 29	Second.	5 00
O. Barnett, New Concord, O	Bamey		
Ram 1 year old and under 2.			
E. Campbell & Son, Pittsfield, O		First	10 00
J. L. Henderson & Son, Washington, Pa	Fearless	Second.	5 00
Same	Locust Grove 21		
Ram under 1 year.			
E. Campbell & Son, Pittsfield, O		First	5 00
J. E. Wing, Mechanicsburg, O		Second.	3 00
E. Campbell & Son, Pittsfield, O			
O. Barnett, New Concord, O	Dewey		
J. L. Henderson & Son, Washington, Pa			
Same			
Ewe 2 years old or over.			
J. L. Henderson & Son, Washington, Pa	H, B, & C, 291	First	10 00
E. Campbell & Son, Pittsfield, O		Second	5 00
Same			
O. Barnett, New Concord, O	Beauty		
J. L. Henderson & Son, Washington, Pa	H, B, & C, 146		
J. E. Wing, Mechanicsburg, O			
Ewe 1 year old and under 2.			
E. Campbell & Son, Pittsfield, O		First	10 00
Same		Second	5 00
O. Barnett, New Concord, O			
J. L. Henderson & Son, Washington, Pa	Locust Grove 30		
Same	Locust Grove 28		
J. E. Wing, Mechanicsburg, O			
Ewe under 1 year.			
E. Campbell & Son, Pittsfield, O		First	5 00
Same		Second	3 00
O. Barnett, New Concord, O			
J. L. Henderson, Washington, Pa			
Same			
J. E. Wing, Mechanicsburg, O			

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium	Amount.
Flock.			
J. L. Henderson & Son, Washington Pa		First	$15 00
O. Barnett, New Concord, O			
J. E. Wing, Mechanicsburg, O			
Pen of four lambs.			
J. L. Henderson & Son, Washington, Pa		First	15 00
O. Barnett, New Concord, O			

JOHN L. THOMPSON, Gas City, Ind.—Judge.

FAT SHEEP.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Pen of wethers 2 years old and over.			
A. A. Bates, Irwin, O			
Geo. Allen, Allerton, Ill			
Pen of two wethers 1 year old and under 2.			
C. C. Shaw & Son, Newark, O		First	$8 00
A. A. Bates, Irwin, O		Second.	5 00
Geo. Allen, Allerton Ill			
J. L. Henderson & Son, Washington, Pa			
Pen of two wether lambs.			
A. A. Bates, Irwin, O			
Geo. Allen, Allerton, Ill			

JOHN L. THOMPSON, Gas City, Ind.—Judge.

SPECIAL PREMIUMS OFFERED BY THE CONTINENTAL DORSET CLUB.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Pen of four Dorset horn lambs.			
E. Campbell & Son, Pittsfield, O		First	$30 00
J. L. Henderson & Son, Washington, Pa		Second.	20 00
J. E. Wing, Mechanicsburg, O			
Oliver Barnett, New Concord, O			

BERT WILSON, Muncie, Ind.—Judge.

SPECIAL PREMIUMS OFFERED BY THE AMERICAN COTSWOLD RECORD.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Flock.			
D. B. Watt & Son, Xenia, O.		First	$10 00

JOHN L. THOMPSON, Gas City, Ind.—Judge.

SPECIAL PREMIUMS OFFERED BY THE HAMPSHIRE-DOWN BREEDERS' ASSOCIATION OF AMERICA.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Pen of 4 registered Hampshire-Down lambs.			
Scarff & Artz, New Carlisle, O		First	$25 00
John Pierce, Troy, O.		Second.	15 00
W. K. Springer, Jeromeville, O.			

JOHN L. THOMPSON, Gas City, Ind.—Judge.

SPECIAL PREMIUMS OFFERED BY AMERICAN SHROPSHIRE SHEEP REGISTER ASSOCIATION.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Flock of registered Shropshires 1 year old or over.			
H. W. Chaffee, Brecksville, O.		First	$20 00
Geo. Allen, Allerton, Ill.			
J. Billman & Sons, Sullivan, Ind.			
Flock of registered Shropshire lambs.			
H. W. Chaffee, Brecksville, O		First	15 00
Geo Allen, Allerton, Ill			
T. W. Davison, Mechanicsburg, O.			
J. Billman & Sons, Sullivan, Ind.			

JOHN L. THOMPSON, Gas City, Ind.—Judge.

SPECIAL PREMIUMS OFFERED BY AMERICAN SOUTH-DOWN BREEDERS' ASSOCIATION.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Pen of four lambs.			
C. C. Shaw & Son, Newark, O		First	6v Rec
R. C. Watt, Xenia, O.			
W. H. Compton, Monroe, O			

JOHN L. THOMPSON, Gas City, Ind.—Judge.

SWINE — J. S. STUCKEY, Member in Charge.

BERKSHIRES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar 2 years old or over.			
R. Gentry, Danville, Ky	Columbus Duke	First	$10 00
Same	Wood Dale Star 3d	Second.	5 00
W. J. Thorp, Pataskala, O	Elmwood		
John Axline, Summit Station, O	Billy		
L. C. Peterson, Spring Valley, O			
Boar 1 year old and under 2.			
R. Gentry, Danville, Ky	Up to Date	First	10 00
C. Norton, Louisville, Ky	Head Light, Jr	Second.	5 00
L. C. Peterson, Spring Valley, O			
W. J. Thorp, Pataskala, O	Royal Lee		
Boar 6 months old and under 1 year.			
C. Norton, Louisville, Ky	Headlight 15	First	8 00
L. C. Peterson, Spring Valley, O		Second.	5 00
John Axline, Summit Station, O			
W. J. Thorp, Pataskala, O	Dewey		
Boar under 6 months.			
R. Gentry, Danville, Ky	Azote	First	5 00
Same	Delegate	Second.	3 00
S. W. Calhoun, Apple Creek, O	Dewey C		
W. J. Thorp, Pataskala, O	Royal Broadtop		
Sow 2 years old or over.			
R. Gentry, Danville, Ky	Duchess	First	10 00
Same	Nora C	Second.	5 00
L. C. Peterson, Spring Valley, O	Ella		
W. J. Thorp, Pataskala O	Jewel II		
Sow 1 year old and under 2.			
L. C. Peterson Spring Valley, O	Silver Tip	First	10 00
R. Gentry, Danville, Ky	Charmer	Second.	5 00
W. J. Thorp, Pataskala. O	Model Queen		
John Axline, Summit Station, O	Summit Rose		
L. C. Peterson, Spring Valley O			
R. Gentry, Danville, Ky	Corine Willie II		
Same	Lady Fashion		
Sow 6 months old and under 1 year.			
C. Norton, Louisville, Ky	Brook	First	8 00
W. J. Thorp, Pataskala, O	Lady Lee	Second.	5 00
Same	Lady Lee No. 2		
S. W. Calhoun, Apple Creek, O	Fanny J		
L C. Peterson, Spring Valley, O			
Same			
C. Norton, Louisville, Ky	Brook 2d		
Sow under 6 months.			
R. Gentry, Danville, Ky	Benzetta	First	5 00
Same	Beulah	Second.	3 00
Same	Marietta		
W. J. Thorp, Pataskala, O	Adea		
John Axline, Summit Station, O			
S. W. Calhoun, Apple Creek, O	Anna C		
L. C. Peterson, Spring Valley, O			

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar with four of his get.			
R. Gentry, Danville, Ky	Wood Dale Star 3d	First	$15 00
L. C. Peterson, Spring Valley, O			
Breeding sow with four of her pigs.			
John Axline, Summit Station, O	Rose	First	15 00
L. C. Peterson, Spring Valley, O			
Boar and three sows all over 1 year.			
R Gentry, Danville, Ky		First	15 00
L. C. Peterson, Spring Valley, O			
Boar and three sows all under 1 year.			
C. Norton, Louisville, Ky		First	15 00
L. C. Peterson, Spring Valley, O			
W. J. Thorp, Pataskala, O			

W. P. **Harvey**, Sibley, Ill.—Judge.

POLAND CHINAS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar 2 years old and over.			
Robinson & Fortes, Piqua, O	T. C. U. S	First	$10 00
A. N. Wisely, Oakwood, O	Searchlight	Second	5 00
H. Ingalls, Alton, O	Week's Trade		
C W. O'Harra Galloway, O	David Wickes		
J. J. Snyder, Paris, O	Protection		
Same	Butler		
Boar 1 year old and under 2.			
G. S. Hall, Johnsonville, O.	L's Chief Tecumseh	First	10 00
Bounds Bros., Atherton, O	Chief Jr	Second	5 00
A. N. Wisely, Oakwood, O	Chief Model		
W. J. Orr, Uniopolis O	Orr's Grand U. S		
O. Planck, Camp Chase, O	Special		
S. Pyers & Son, Nashville. O	Streacher		
A. H. Mather, Wilmington, O	Searchlight		
F. M. Hays, Piketon, O	Ideal Sunshine		
Boar six months old and under 1 year.			
J. M. Klever, Bloomingburg, O		First	8 00
W. J. Orr. Uniopolis, O		Second	5 00
Same			
O. Planck, Camp Chase, O	Dewey		
G. M. Kniken & Co Hamilton, O.	Cookley		
A. N. Wisely, Oakwood, O			
M. Matticks, Nashville, O			
Robinson & Fortes, Piqua, O			
A. H. Mather, Wilmington O	Royal Price		
Frank Wagner, Mansfield, O			
C. W Haines, Centerville, O			
J. M. Linson, South Solon, O			
Bounds Bros., Atherton, O			

POLAND CHINAS—Continued.

Owner's Name and Postoffice	Name of Animal.	Premium.	Amount.
Boar under 6 months.			
A. N. Wiseley, Oakwood, O.	Sampson	First.	$5 00
J. M. Klever, Bloomingburg, O.		Second.	3 00
Same			
Bruce Bros., Chesterville, O.			
C. W. Haines, Centerville, O.			
Same			
Same			
Same			
F Kalb & Son, Ontario, O.	Victor F.		
Same	Chief		
A. N Wiseley, Oakwood, O.	Dewey		
H. Ingalls Alton, O.			
C. W. O'Harra, Galloway, O			
G. M. Kinikin & Co., Hamilton, O.			
J. J. Snyder, Paris, O			
John Salmon, Madison Mills, O.			
Same			
M. Matticks, Nashville, O			
Same			
F. M. Hays, Piketon, O.	Sampson		
Frank Wagner, Mansfield O.			
Sow 2 years old and over.			
J. M. Klever Bloomingburg, O.	Galena	First.	10 00
Robinson & Fortes, Piqua, O.	Miriam	Second.	5 00
Same			
G. M Kinikin & Co., Hamilton, O.	Lady Wilson		
S. Pyres & Son, Nashville, O	Ana		
W. J. Orr, Uniopolis, O.	Grateful U. S.		
Sow 1 year old and under 2.			
A. N. Wiseley, Oakwood, O.	Fashion's Model	First.	10 00
Same	Lulu Lie	Second	5 00
Same	Fairy, U. S.		
H. Ingalls, Alton, O.			
Same			
S. Pyres & Son, Nashville, O.	Dan Whiteface		
John Salmon, Madison Mills, O.			
Robinson & Fortes, Piqua, O.			
Frank Wagner, Mansfield, O.			
J. M. Klever, Bloomingburg, O.			
Bounds Bros., Atherton, O.			
Same			
Sow 6 months old and under 1 year.			
Bounds Bros., Atherton, O.	Lillie Leslie	First.	8 00
J. M. Klever, Bloomingburg, O.		Second.	5 00
Same			
Bounds Bros, Atherton, O			
A. N. Wiseley, Oakwood, O.	Lady Schley		
Same	Queen Hobson		
O. Planck, Camp Chase, O.	Tony Loan		
G. M Kinikin & Co, Hamilton, O.			
Same			
J. J. Snyder, Paris, O.			
Same			
Robinson & Fortes, Piqua O.	Latest Style		
Same			
F. M. Hays, Piketon, O.	Tomket		
Same	Choice		
Frank Wagner, Mansfield, O.			
J M. Linson, South Solon, O.			
Same			
Same			

POLAND CHINAS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Sow under 6 months.			
C. W. Haines, Centerville, O	Beauty 2d	First	$5 00
J. M. Klever, Bloomingburg, O		Second	3 00
Bruce Bros., Chesterville, O			
Same			
Bounds Bros., Atherton, O			
Same			
C. W. Haines, Centerville, O			
F. Kalb & Son, Ontario, O	First Choice		
Same	X Perfect 2d		
A. N. Wiseley, Oakwood, O			
Same			
H. Ingalls, Alton, O			
C. W. O'Harra, Galloway, O			
G. M. Kinikin & Co., Hamilton, O			
J. J. Snyder, Paris O			
John Salmon, Madison Mills, O			
M. Matticks, Nashville, O			
F. M. Hays, Piketon, O	Moonlight		
Same	Moonlight, H.		
Frank Wagner, Mansfield, O			
C. W. Haines, Centerville, O			

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar with four of his get.			
F. M. Hays, Piketon, O		First	$15 00
H. Ingalls, Alton, O			
O. Plank, Camp Chase, O			
Breeding sow with four of her pigs.			
J. M. Klever, Bloomingburg, O		First	15 00
Frank Wagner, Mansfield, O			
Boar and three sows all over 1 year.			
A. N. Wiseley, Oakwood, O		First	15 00
S. Pyers & Son Nashville, O			
Robinson & Fortes, Piqua, O			
Boar and three sows all under 1 year.			
J. M. Klever, Bloomingburg, O		First	15 00
Bounds Bros., Atherton, O			
F. Kalb & Son, Ontario, O			
A. N. Wiseley Oakwood, O			
G. M. Kinikin & Co., Hamilton, O			
Robinson & Fortes, Piqua O			
Frank Wagner, Mansfield, O			
C. W. Haines, Centerville, O			
Bruce Bros., Chesterville, O			
J. M. Linson South Solon, O			

W. R. HARVEY, Sibley, Ill.—Judge.

Chester Whites.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar 2 years old and over.			
E. A. Acre, Elsie, Mich	Clipper	First	$10 00
W. T. Dever, Lucasville, O	Columbia	Second	5 00
Boar 1 year old and under 2.			
F. P. & J. J. Hardin, South Warsaw, O	Protection Choice	First	10 00
P. T. Courter, Delaware, O	Bob	Second	5 00
E. A. Acre, Elsie, Mich	Clipper, Jr.		
W. H. Pool, Delaware, O	Protection 2d		
J. L. Beringer, Monroe, O			
W. T. Dever, Lucasville, O	Tomy		
C. W. Baker, Delaware, O	Billy		
D. A. Lane, Commercial Point, O			
Boar 6 months old and under 1 year.			
F. P. & J. J. Hardin, South Warsaw, O	Dewey	First	8 00
P. T. Courter, Delaware, O	Lenny	Second	5 00
E. A. Acre, Elsie, Mich			
Same			
W. H. Pool Delaware, O			
J. L. Beringer, Marion, O			
W. T. Dever, Lucasville, O			
D. A. Lane, Commercial Point, O			
Boar under 6 months.			
W. T. Dever, Lucasville, O		First	5 00
F. P. & J. J. Hardin, South Warsaw, O	Protection Boy	Second	3 00
Same	Protection Lad		
E. A. Acre, Elsie, Mich			
W. H. Pool, Delaware, O			
J. L. Beringer, Marion, O			
C. W. Baker, Delaware, O			
P. T. Courter, Delaware, O			
D. A. Lane, Commercial Point, O			
Sow 2 years old or over.			
E. A. Acre, Elsie, Mich	Hard to Beat	First	10 00
W. T. Dever, Lucasville, O	Claud	Second	5 00
W. J. Tharp, Pataskala, O			
E. A. Acre Elsie, Mich	Blanche Acre		
W. H. Pool, Delaware, O			
W. T. Dever, Lucasville O	Fanny		
Sow 1 year old and under 2.			
W. H. Pool, Delaware, O	Belle A	First	10 00
J. L. Beringer, Marion O		Second	5 00
E A. Acre, Elsie, Mich	Bird Acre		
W. H. Pool, Delaware, O			
W. T. Dever, Lucasville, O	Nancy 3d		
Same	Pearl		
P. T. Courter, Delaware, O	Lulu		
Sow 6 months old and under 1 year.			
F. P. & J. J. Hardin, South Warsaw, O	Fantasma	First	8 00
E. A. Acre, Elsie, Mich		Second	5 00
F. P. & J. J. Hardin, South Warsaw, O	Semper Fidellis Girl		
E. A. Acre, Elsie, Mich			
W. H. Pool, Delaware, O			
W. T. Dever, Lucasville, O			
Sow under 6 months.			
J. L. Beringer, Marion, O		First	5 00
D. A. Lane, Commercial Point, O		Second	3 00
Same			
F. P. & J. J. Hardin, South Warsaw, O	Lowrie		
Same	Gladys		
E. A. Acre, Elsie, Mich			
W. H. Pool, Delaware, O			
C. W. Baker, Delaware, O			
P. T. Courter, Delaware, O			

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar with four of his get.			
F. P. & J. J. Hardin. South Warsaw, O.		First	$15 00
E. A. Acre, Elsie, Mich.			
D. A. Lane, Commercial Point, O.			
Breeding sow with four of her pigs.			
E. A. Acre, Elsie, Mich.		First	15 00
W. H. Pool, Delaware. O.			
W. T. Dever, Lucasville, O.			
Boar with 3 sows all over 1 year.			
E. A. Acre, Elsie, Mich.		First	15 00
W. H. Pool, Delaware, O.			
W. T. Dever, Lucasville, O.			
Boar and 3 sows all under 1 year.			
F. P. & J. J. Hardin, South Warsaw, O.		First	15 00
E. A. Acre, Elsie, Mich			
C. W. Baker, Delaware, O.			
D. A. Lane, Commercial Point, O.			

W. B. **Wallace**, Oxford, O.—Judge.

VICTORIAS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar two years old or over.			
J. A. Ineichen, Celina, O.		First	$10 00
F. B. Huey & Co., Westchester, Ind		Second.	5 00
Geo. F. Davis & Co., Dyer, Ind.	Almont		
Same	Almont, 2nd.		
Boar 1 year old and under 2.			
J. A. Ineichen, Celina, O.		First	10 00
F. B. Huey & Co., Westchester, Ind.		Second.	5 00
Geo. F. Davis & Co., Dyer, Ind	Honest Lad		
Same	Doc		
Boar 6 months old and under 1 year.			
J. A. Ineichen, Celina, O.		First	8 00
Geo. F. Davis & Co. Dyer, Ind.	Jim	Second.	5 00
Same	Don		
F. B. Huey & Co., Westchester, Ind.			
Boar under 6 months			
F. B. Huey & Co., Westchester, Ind.		First	5 00
Same		Second.	3 00
Geo. F. Davis & Co., Dyer, Ind.	Cheap		
Same	Dandy J		
J. A. Ineichen, Celina, O.			
Sow 2 years old and over.			
F. B. Huey & Co., Westchester, Ind.		First	10 00
Geo. F. Davis & Co., Dyer, Ind.	Lady Almont	Second.	5 00
Same	Lady Almont, 2nd.		
J. A. Ineichen, Celina, O.			

VICTORIAS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Sow 1 year old and under 2.			
J. A. Ineichen, Celina, O.	Lucy	First.	$10 00
Geo. F. Davis & Co., Dyer, Ind.	Lady Elegant	Second.	5 00
Same	Spots		
F. B. Huey & Co., Westchester, Ind.			
Same			
J. A. Ineichen, Celina, O.			
Sow 6 months old and under 1 year.			
Geo. F. Davis & Co., Dyer, Ind.	Fancy Fairy 1st	First	8 00
J. A. Ineichen, Celina, O		Second.	5 00
F. B. Huey, Westchester, Ind.			
Geo. F. Davis & Co., Dyer, Ind.	Fancy Fairy 2nd		
Sow under 6 months.			
F. B. Huey & Co., Westchester, Ind		First,	5 00
Same		Second.	3 00
Geo. F. Davis & Co., Dyer, Ind.	Ann		
Same	Bell		
J. A. Ineichen, Celina, O.			

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar with four of his get.			
Geo. F. Davis & Co., Dyer. Ind		First.	$15 00
J. A. Ineichen, Celina, O.			
F. B. Huey & Co., Westchester, Ind.			
Breeding sow with four of her pigs.			
F. B. Huey & Co., Westchester, Ind.		First	15 00
Geo F. Davis & Co., Dyer, Ind.			
Boar and three sows all over 1 year.			
J. A. Ineichen, Celina, O.		First.	15 00
F. B. Huey & Co. Westchester, Ind.			
Geo. F. Davis & Co., Dyer, Ind			
Boar and three sows all under 1 year.			
Geo. F. Davis & Co.. Dyer, Ind		First.	15 00
F. B. Huey & Co., Westchester, Ind.			

W. R. HARVEY, Sibley, Ill.—Judge,

Duroc Jerseys.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar 2 years old or over.			
L. L. Moorman & Co., Winchester, Ind	Protection M	First	$10 00
Orrie Walter, Lebanon, O	Judge Wonder	Second.	5 00
Same	U. S. Wonder		
Boar 1 year old and under 2.			
L. L. Moorman & Co., Winchester, Ind	Orion R	First	10 00
Orrie Walter, Lebanon, O	Ben Loo	Second.	5 00
J. L. Wyly, Granville, O	Lanky Bob		
Boar 6 months old and under 1 year.			
Orrie Walter, Lebanon, O	Fancy Lad	First	8 00
Same	Fancy King	Second.	5 00
L. L. Moorman & Co., Winchester, Ind	Waverly C. Rosebud		
J. L. Wyly, Granville, O			
Same			
Boar under 6 months.			
L. L. Moorman & Co., Winchester, Ind		First	5 00
Orrie Walter, Lebanon, O	Red Wonder	Second.	3 00
Same	Red Wonder 2d		
J. L. Wyly, Granville, O			
Same			
Sow 2 years old or over.			
Orrie Walters, Lebanon, O	Walter's Blanche	First	10 00
L. L. Moorman & Co., Winchester, Ind	Red Oak Belle 2d	Second.	5 00
Same	May Alphonso		
Orrie Walters, Lebanon, O	Lady Hubert		
Sow 1 year old and under 2.			
Orrie Walters, Lebanon, O	Lucy Wonder	First	10 00
Same	Fancy Duchess	Second.	5 00
Sow 6 months old and under 1 year.			
Orrie Walters, Lebanon, O	Katie Wonder VI	First	8 00
Same	Katie Wonder VII	Second	5 00
L. L. Moorman & Co., Winchester, Ind			
Same			
J. L Wyly. Granville, O			
Sow under 6 months.			
L. L. Moorman & Co., Winchester, Ind		First	5 00
Same		Second.	3 00
Orrie Walters, Lebanon, O	Mary Wonder		
Same	Mary Wonder II		
J. L. Wyly, Granville, O			
Same			

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar with four of his get.			
Orrie Walter Lebanon O		First	$15 00
L. L Moorman & Co., Winchester, Ind	Orion R		
Breeding sow with four of her pigs.			
Orrie Walter, Lebanon, O		First	15 00
L. L. Moorman & Co , Winchester, Ind	May Alphonso		
Boar and three sows all over 1 year.			
Orrie Walter, Lebanon, O		First	15 00
Boar and three sows all under 1 year.			
Orrie Walter, Lebanon, O		First	15 00
L. L. Moorman & Co., Winchester, Ind			
J. L Wyly, Granville O			

W. B. WALLACE, Oxford, O.—Judge.

SUFFOLK, YORKSHIRE, CHESHIRE AND ESSEX.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar 2 years old and over.			
Bascom & McMurry, California, Mich	Baldwin	First	$10 00
Spiker & Taylor, Mansfield, O	Duke	Second.	5 00
Boar 1 year old and under 2.			
Bascom & McMurry, California, Mich	Johnson	First	10 00
Mrs. A. J. Wilson, Pittsfield, O	Pat	Second.	5 00
Boar 6 months old and under 1 year.			
Bascom & McMurry, California, Mich	Gen. Miles	First	8 00
Spiker & Taylor, Mansfield, O	Sampson	Second.	5 00
Boar under 6 months.			
Bascom & McMurry, California, Mich		First	5 00
Mrs. A. J. Wilson, Pittsfield, O		Second.	3 00
Same			
Bascom & McMurry, California, Mich			
Sow 2 years old or over.			
Mrs. A. J. Wilson, Pittsfield, O.	Franklin 4th	First	10 00
Bascom & McMurry, California, Mich	Pauline B	Second.	5 00
Spiker & Taylor, Mansfield, O	Queen of Quality		
Sow 1 year old and under 2.			
Bascom & McMurry, California, Mich	Bertha M	First	10 00
Mrs. A. J. Wilson, Pittsfield, O	Faultless Queen of York	Second.	5 00
Same	Winnie		
Bascom & McMurry, California, Mich	Alvina Maid		
Sow 6 months old and under 1 year.			
Mrs. A. J. Wilson, Pittsfield, O	Beatrice	First	8 00
Bascom & McMurry, California, Mich	Eva H. 5th	Second.	5 00
Spiker & Taylor, Mansfield, O	Black Nan		

SUFFOLK, YORKSHIRE, CHESHIRE AND ESSEX—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Sow under 6 months.			
Mrs. A. J. Wilson, Pittsfield, O		First	$5 00
Bascom & McMurry, California, Mich		Second.	3 00
Same			
Mrs. A. J. Wilson, Pittsfield, O			

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar with four of his get.			
Bascom & McMurry California, Mich		First	$15 00
Spiker & Taylor, Mansfield, O	Duke		
Breeding sow with four of her pigs.			
Mrs. A. J. Wilson, Pittsfield, O		First	15 00
Spiker & Taylor Mansfield, O	Louis Beauty		
Bascom & McMurry, California, Mich			
Boar and three sows all over 1 year.			
Bascom & McMurry, California, Mich		First	15 00
Mrs. A. J. Wilson, Pittsfield, O			
Boar and three sows all under 1 year.			
Mrs. A. J. Wilson, Pittsfield, O		First	15 00
Bascom & McMurry, California, Mich			

W. B. WALLACE, Oxford, O.—Judge.

SPECIAL PREMIUMS.

POLAND CHINAS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Poland China boar and two sows.			
A. N. Wiseley Oakwood, O		First	5 v.rec
H. Ingalls, Alton, O			
G. M. Kinnikin & Co., Hamilton, O			
C. W. Haines, Centerville, O			
J. M. Klever, Bloomingburg, O			
Poland China boar pig.			
J. M. Klever, Bloomingburg, O		First	1 v.rec
A. N. Wiseley, Oakwood, O			
H. Ingalls, Alton, O			
O. Planck, Camp Chase, O.			
G. M. Kinnikin & Co., Hamilton, O			
Frank Wagner, Mansfield, O			
C. W. Haines, Centerville, O			

W. R. HARVEY, Sibley, Ill., and W. B. WALLACE, Oxford, O.—Judges.

POULTRY—J. S. STUCKEY, Member in Charge.

CLASS I—AMERICAN.

Owner's Name and Postoffice	Kind of Fowl.	Amount.
Barred Plymouth Rock.		
W. T. Easton Watkins, O	Best cock	$1 25
Chas. McClave, New London, O	2d "	75
I. H. Carmen, Sedan, O	Best cockerel	1 25
W. T. Volk, Westerville, O	2d "	75
Chas. McClave, New London, O	Best hen	1 25
I. H. Carmen, Sedan, O	Best pullet	1 25
Same	2d "	75
Same	Best breeding pen	2 00
Chas. McClave, New London, O	2d "	1 00
White Plymouth Rock.		
F. W. Landfear & Son, Bedford, O	Best cock	1 25
J. M. Linson, South Solon, O	2d "	75
W. T. Elliott, Bloomingburg, O	Best cockerel	1 25
Chas. Gammerdinger, Columbus, O	2d "	75
J. M. Linson, South Solon, O	Best hen	1 25
W. T. Elliott, Bloomingburg, O	2d "	75
Same	Best pullet	1 25
Same	2d "	75
J. M. Linson, South Solon, O	Best breeding pen	2 00
W. T. Elliott, Bloomingburg, O	2d "	1 00
Buff Plymouth Rock.		
Chas. McClave, New London, O	Best cock	1 25
C. Thumm, Salem, O	2d "	75
Thos. Cory, New Carlisle, O	Best cockerel	1 25
C. Thumm, Salem, O	2d "	75
Chas. McClave, New London, O	Best hen	1 25
C. Thumm, Salem, O	2d "	75
W. T. Linn, Ashley, O	Best pullet	1 25
Thos. Cory, New Carlisle, O	2d "	75
Chas. McClave, New London, O	Best breeding pen	2 00
C. Thumm, Salem, O	2d "	1 00
White Wyandotte.		
Renck & Shower, Basil, O	Best cock	1 25
Chas. McClave, New London, O	2d "	75
C. H. Bell, Ashley O	Best cockerel	1 25
W. J. Hodges, Mt. Sterling, O	2d "	75
Same	Best hen	1 25
Chas. McClave, New London, O	2d "	75
Same	Best pullet	1 25
W. J. Hodges Mt. Sterling, O	2d "	75
Chas. McClave, New London, O	Best breeding pen	2 00
C. H. Bell, Ashley, O	2d "	1 00
Silver Wyandotte.		
F. W. Landfear & Son, Bedford O	Best cock	1 25
Chas. Gammerdinger, Columbus, O	2d "	75
Clyde E. Smith, Ashley, O	Best cockerel	1 25
E. C. Sipe, Ashley, O	2d "	75
G. G. Wherry, Galena, O	Best hen	1 25
I. H. Carmen, Sedan, O	2d "	75
Clyde E. Smith, Ashley, O	Best pullet	1 25
J. F. Wrenn, Mt. Sterling, O	2d "	75
Chas. McClave, New London, O	Best breeding pen	2 00
Chas. Gammerdinger, Columbus, O	2d "	1 00
Golden Wyandotte.		
Chas. McClave, New London, O	Best cock	1 25
S. B. McFarland, Sunbury, O	2d "	75
Chas. Gammerdinger, Columbus, O	Best cockerel	1 25
Clyde E. Smith, Ashley, O	2d "	75

CLASS I—AMERICAN—Concluded.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Golden Wyandotte—Concluded.		
S. B. McFarland, Sunbury, O	Best hen	$1 25
Same	2d "	75
Clyde E. Smith, Ashley, O	Best pullet	1 25
M. M. Myers, New Dover, O	2d "	75
Clyde E. Smith, Ashley, O	Best breeding pen	2 00
S. B. McFarland, Sunbury, O	2d "	1 00
Black Wyandotte.		
Charles Gammerdinger, Columbus, O	Best cock	1 25
Same	Best hen	1 25
Buff Wyandotte.		
J. J. Zimmer, Zimmer, O	Best cock	1 25
Chas Gammerdinger, Columbus, O	2d "	75
H. V. Shoemaker, Ashley, O	Best cockerel	1 25
Chas. Gammerdinger, Columbus, O	2d "	75
M. M. Myers, New Dover, O	Best hen	1 25
Chas. Gammerdinger, Columbus, O	2d "	75
H. V. Shoemaker, Ashley, O	Best pullet	1 25
Same	2d "	75
Same	Best breeding pen	2 00
Same	2d "	1 00
Black Java.		
Chas. Gammerdinger, Columbus, O	Best cock	1 25
Thos. Cory, New Carlisle, O	2d "	75
Charles Gammerdinger, Columbus, O	Best cockerel	1 25
Same	2d "	75
Thos. Cory, New Carlisle, O	Best hen	1 25
Chas. Gammerdinger, Columbus, O	2d "	75
Same	Best pullet	1 25
J. F. Lutz, Amanda, O	2d "	75
Chas. Gammerdinger, Columbus, O	Best breeding pen	2 00

CLASS II—ASIATIC.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Light Brahma.		
Chas. Gammerdinger, Columbus, O	Best cock	$1 25
W. J. Irwin, Ada, O	2d "	75
Chas. Gammerdinger, Columbus, O	Best cockerel	1 25
Same	2d "	75
W. T. Volk, Westerville, O	Best hen	1 25
Chas. Gammerdinger, Columbus, O	2d "	75
W. T. Volk, Westerville, O	Best pullet	1 25
Same	2d "	75
Same	Best breeding pen	2 00
Chas. Gammerdinger, Columbus, O	2d "	1 00

CLASS II—ASIATIC—Concluded.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Dark Brahma.		
Chas. Gammerdinger, Columbus, O	Best cock	$1 25
Renck & Shower, Basil, O	2d "	75
Chas. Gammerdinger, Columbus, O	Best cockerel	1 25
Same	2d "	75
Renck & Shower, Basil, O	Best hen	1 25
Chas. Gammerdinger, Columbus, O	2d "	75
Same	Best pullet	1 25
Same	2d "	75
Same	Best breeding pen	2 00
Renck & Shower, Basil, O	2d "	1 00
Buff Cochin.		
W. J. Irwin, Ada, O	Best cock	1 25
Same	2d "	75
Chas. McClave, New London, O	Best cockerel	1 25
D. A. Hennis, Sunbury, O	2d "	75
W. J. Irwin, Ada, O	Best hen	1 25
Same	2d "	75
D. A. Hennis, Sunbury, O	2d "	75
W. J. Irwin, Ada, O	Best breeding pen	2 00
D. A. Hennis, Sunbury, O	2d "	1 00
Partridge Cochin.		
Clyde E. Smith, Ashley, O	Best cock	1 25
Same	2d "	75
Same	Best cockerel	1 25
Same	2d "	75
Same	Best hen	1 25
Same	2d "	75
Same	Best pullet	1 25
Same	2d "	75
Same	Best breeding pen	2 00
H. V. Shoemaker, Ashley, O	2d "	1 00
White Cochin.		
W. J. Irwin, Ada, O	Best cock	1 25
Chas. Gammerdinger, Columbus, O	2d "	75
Same	Best cockerel	1 25
Same	2d "	75
Grant R. Baxter, Hillsdale, Mich	Best hen	1 25
W. J. Irwin, Ada, O	2d "	75
Chas. Gammerdinger, Columbus, O	Best pullet	1 25
Same	2d "	75
Black Cochin.		
Grant R. Baxter, Hillsdale, Mich	Best cock	1 25
W. J. Irwin, Ada, O	2d "	75
James Pace, Columbus, O	Best cockerel	1 25
W. J. Irwin, Ada, O	Best hen	1 25
James Pace, Columbus, O	2d "	75
Same	Best pullet	1 25
Black Langshan.		
Chas. Gammerdinger, Columbus, O	Best cock	1 25
C. B. Wilbur, New London, O	2d "	75
Chas. Gammerdinger, Columbus, O	Best cockerel	1 25
G. R. Baxter, Hillsdale, Mich	Best hen	1 25
Renck & Shower, Basil, O	2d "	75
C. B. Wilbur, New London, O	Best pullet	1 25
Same	2d "	75
Same	Best breeding pen	2 00
Chas. Gammerdinger, Columbus, O	2d "	1 00

CLASS III—MEDITERRANEAN.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
S. C. Brown Leghorn.		
Chas. Gammerdinger, Columbus, O	Best cock	$1 25
F. W. Landfere & Son, Bedford, O	2d "	75
W. T. Volk, Westerville, O	Best cockerel	1 25
J. E. Goddard, Willoughby, O	2d "	75
W. J. Irwin, Ada, O	Best hen	1 25
J. E. Goddard, Willoughby, O	2d "	75
J. T. Hanawalt, Delaware, O	Best pullet	1 25
L. I. Hess, Bloomingburg, O	2d "	75
C. H. Bell, Ashley, O	Best breeding pen	2 00
L. I. Hess, Blomingburg, O	2d "	1 00
R. C. Brown Leghorn.		
Chas. Gammerdinger, Columbus, O	Best cock	1 25
J. F. Lutz, Amanda, O.	2d "	75
J. T. Hanawalt, Delaware, O	Best cockerel	1 25
Chas. Gammerdinger, Columbus, O	2d "	75
J. T. Hanawalt, Delaware, O	Best hen	1 25
Chas. Gammerdinger, Columbus, O	2d "	75
Same	Best pullet	1 25
J. T. Hanawalt, Delaware, O	2d "	75
Chas. Gammerdinger, Columbus, O	Best breeding pen	2 00
J. T. Hanawalt, Delaware, O	2d "	1 00
S. C. White Leghorn.		
Thos. Cory, New Carlisle, O	Best cock	1 25
F. W. Landfere & Son, Bedford, O	2d "	75
Same	Best cockerel	1 25
Same	2d "	75
W. J. Irwin, Ada, O	Best hen	1 25
F. W. Landfere & Son, Bedford, O	2d "	75
J. F. Lutz, Amanda, O	Best pullet	1 25
F. W. Landfere & Son, Bedford, O	2d "	75
C. H Bell, Ashley, O	Best breeding pen	2 00
Chas. Gammerdinger, Columbus, O	2d "	1 00
R. C. White Leghorn.		
Chas. Gammerdinger, Columbus, O	Best cock	1 25
G. R. Baxter, Hillsdale, Mich	2d "	75
Same	Best cockerel	1 25
J. F. Lutz, Amanda, O.	2d "	75
G. R. Baxter, Hillsdale, Mich	Best hen	1 25
Chas. Gammerdinger, Columbus, O	2d "	75
G. R. Baxter, Hillsdale, Mich	Best pullet	1 25
Same	2d "	75
Black Leghorn.		
F. W. Landfere & Son, Bedford, O	Best cock	1 25
Chas. Gammerdinger, Columbus, O	2d "	75
Same	Best cockerel	1 25
M. M. Myers, New Dover, O	2d "	75
F. W. Landfere & Son, Bedford, O	Best hen	1 25
Same	2d "	75
Chas. Gammerdinger, Columbus, O	Best pullet	1 25
F. W. Landfere & Son, Bedford, O	2d "	75
Buff Leghorn.		
Chas. McClave. New London, O	Best cock	1 25
Chas. Gammerdinger, Columbus, O	2d "	75
Robt. Bell, Ashley, O	Best cockerel	1 25
Eustice & Porter Columbus, O	2d "	75
Chas. Gammerdinger, Columbus, O	Best hen	1 25
W. J. Irwin, Ada, O	2d "	75
Robt. Bell, Ashley, O	Best pullet	1 25
Same	2d "	75
Same	Best breeding pen	2 00
Chas. McClave, New London, O	2d "	1 00

CLASS III—MEDITERRANEAN—Concluded.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Black Minorca.		
Chas. McClave, New London, O.	Best cock	$1 25
Robert Mairet, Akron, O.	2d "	75
Same	Best cockerel	1 25
Same	2d "	75
Same	Best hen	1 25
Same	2d "	75
Same	Best pullet	1 25
Chas. McClave, New London, O.	2d "	75
Robt. Mairet, Akron, O.	Best breeding pen	2 00
Chas. McClave, New London, O.	2d "	1 00
Blue Andalusians.		
F. W. Landfere & Son, Bedford, O.	Best cock	1 25
W. J. Irwin, Ada, O.	2d "	75
Chas. Gammerdinger, Columbus, O.	Best cockerel	1 25
F. W. Landfere & Son, Bedford. O.	Best hen	1 25
Chas. Gammerdinger, Columbus, O.	2d "	75
Same	Best pullet	1 25
Same	2d "	75
Black Spanish.		
Eustice & Porter, Columbus, O.	Best cock	1 25
Chas. Gammerdinger, Columbus, O.	2d "	75
Eustice & Porter, Columbus, O.	Best cockerel	1 25
Chas. Gammerdinger, Columbus, O.	2d "	75
Eustice & Porter, Columbus, O.	Best hen	1 25
Chas. Gammerdinger, Columbus, O.	2d "	75
Same	Best pullet	1 25
Eustice & Porter, Columbus, O.	2d "	75
Same	Best breeding pen	2 00
Chas. Gammerdinger, Columbus, O.	2d "	1 00

CLASS IV—POLISH.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
W. C. Black Polish.		
Mrs. A. J. Stultz, Sunbury, O.	Best cock	$1 25
Same	2d "	75
Same	Best cockerel	1 25
Same	2d "	75
Same	Best hen	1 25
Same	2d "	75
Same	Best pullet	1 25
Same	2d "	75
Same	Best breeding pen	2 00
Same	2d "	1 00
Silver Polish.		
Chas. McClave, New London, O.	Best cock	1 25
Mrs. E. Gammerdinger, Columbus, O.	2d "	75
Same	Best cockerel	1 25
Same	2d "	75
Same	Best hen	1 25
Same	2d "	75
Same	Best pullet	1 25
Same	2d "	75
Same	Best breeding pen	2 00

CLASS IV—POLISH—Concluded.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
White Polish.		
F. W. Landfere & Son, Bedford, O	Best cock	$1 25
J. F. Lutz, Amanda, O	2d ‘	75
Mrs. E Gammerdinger, Columbus, O	Best cockerel	1 25
F W. Landfere & Son, Bedford, O	Best hen	1 25
Mrs. E. Gammerdinger, Columbus, O	2d "	75
Same	Best pullet	1 25
Same	Best breeding pen	2 00
Golden Polish.		
Mrs. E. Gammerdinger, Columbus, O	Best cock	1 25
Same	2d "	75
Same	Best cockerel	1 25
Same	Best hen	1 25
Same	2d "	75
Same	Best pullet	1 25
Same	2d "	75
Same	Best breeding pen	2 00
Bearded White Polish.		
Mrs. E. Gammerdinger, Columbus, O	Best cock	1 25
Same	2d "	75
Same	Best cockerel	1 25
Same	2d "	75
Same	Best hen	1 25
G. R. Baxter, Hillsdale, Mich	2d "	75
Mrs. E. Gammerdinger, Columbus, O	Best pullet	1 25
Same	2d "	75
Same	Best breeding pen	2 00
Buff Laced Polish.		
G. R. Baxter, Hillsdale, Mich	Best cock	1 25
Mrs. E. Gammerdinger, Columbus, O	Best cockerel	1 25
G. R. Baxter, Hillsdale, Mich	Best hen	1 25
Mrs. E. Gammerdinger, Columbus, O	2d "	75

CLASS V—HAMBURG.

Owner's Name and Postoffice.,	Kind of Fowl.	Amount.
Golden Spangled Hamburg.		
Julius Frank, Akron, O	Best cock	$1 25
J. F. Lutz, Amanda, O	2d "	75
Julius Frank, Akron, O	Best cockerel	1 25
Same	2d "	75
Same	Best hen	1 25
Same	2d "	75
Same	Best pullet	1 25
Same	2d "	75
Same	Best breeding pen	2 00
J. F. Lutz, Akron, O	2d "	1 00

CLASS V—HAMBURG—Concluded.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Silver Spangled Hamburg,		
G. G. Wherry, Galena, O.	Best cock	$1 25
Mrs. E. Gammerdinger, Columbus, O.	2d "	75
G. G. Wherry, Galena, O.	Best cockerel	1 25
Julius Frank Akron, O.	2d "	75
G. G. Wherry, Galena, O.	Best hen	1 25
Julius Frank, Akron, O	2d "	75
G. G. Wherry, Galena, O.	Best pullet	1 25
Mrs. E. Gammerdinger, Columbus, O.	2d "	75
G. G. Wherry, Galena, O.	Best breeding pen	2 00
Julius Frank, Akron, O.	2d "	1 00
Golden Pencilled Hamburg.		
Julius Frank, Akron, O.	Best cock	1 25
Mrs. E. Gammerdinger, Columbus, O.	2d "	75
Julius Frank, Akron, O.	Best cockerel	1 25
Same	2d "	75
Same	Best hen	1 25
Same	2d "	75
Same	Best pullet	1 25
Same	2d "	75
Silver Pencilled Hamburg.		
Julius Frank, Akron, O.	Best cock	1 25
Mrs. E. Gammerdinger, Columbus, O.	2d "	75
Julius Frank, Akron, O.	Best cockerel	1 25
Mrs. E. Gammerdinger, Columbus, O.	2d "	75
Julius Frank, Akron, O.	Best hen	1 25
Same	2d "	75
Same	Best pullet	1 25
Same	2d "	75
Black Hamburg.		
Julius Frank, Akron, O.	Best cock	1 25
W. J. Irwin, Ada, O.	2d "	75
Thos. Cory, New Carlisle, O.	Best cockerel	1 25
Mrs. E. Gammerdinger, Columbus, O.	2d "	75
Julius Frank, Akron, O.	Best hen	1 25
Same	2d "	75
Mrs. E. Gammerdinger, Columbus, O.	Best pullet	1 25
Thos. Cory, New Carlisle, O.	2d "	75
Red Cap.		
G. R. Baxter, Hillsdale, Mich.	Best cock	1 25
Chas. McClave, New London, O.	2d "	75
Same	Best cockerel,	1 25
Same	Best hen	1 25
G. R. Baxter, Hillsdale, Mich.	2d "	75
Chas. McClave, New London, O.	Best pullet	1 25

CLASS VI—FRENCH.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Houdan.		
H. V. Shoemaker, Ashley, O.	Best cock	$1 25
M. M. Myers, New Dover, O.	2d "	75
H. V. Shoemaker, Ashley, O.	Best cockerel	1 25
Same	2d "	75
Same	Best hen	1 25
Same	2d "	75
Chas. Gammerdinger, Columbus, O.	Best pullet	1 25
H. V. Shoemaker, Ashley, O.	2d "	75
Same	Best breeding pen	2 00
Same	2d "	1 00

CLASS VI—FRENCH—Concluded.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Crevecoeur and La Fleche.		
Chas. Gammerdinger, Columbus, O	Best cock	$1 25
M. M. Myers, New Dover, O	2d "	75
Chas. Gammerdinger, Columbus, O	Best cockerel	1 25
Same	2d "	75
Same	Best hen	1 25
M. M. Myers, New Dover, O	2d "	75
Chas. Gammerdinger, Columbus, O	Best pullet	1 25
Same	2d "	75
Same	Best breeding pen	2 00
		1 00

CLASS VII—DORKING.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Silver Gray Dorking.		
Chas. Gammerdinger, Columbus, O	Best cock	$1 25
Same	Best cockerel	1 25
Same	Best hen	1 25
J. F. Lutz, Amanda, O	2d "	75
Chas. Gammerdinger, Columbus, O	Best pullet	1 25
Same	2d "	75
Colored Dorking.		
G. R. Baxter, Hillsdale, Mich	Best cock	1 25
Chas. Gammerdinger, Columbus, O	2d "	75
Same	Best cockerel	1 25
Same	2d "	75
G. R. Baxter, Hillsdale, Mich	Best hen	1 25
Chas. Gammerdinger, Columbus, O	2d "	75
Same	Best pullet	1 25
Same	2d "	75

CLASS VIII—GAME.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Black Breasted Red Game.		
Thos. Cory, New Carlisle, O	Best cock	$1 25
Chas. Gammerdinger, Columbus, O	2d "	75
Same	Best cockerel	1 25
Same	2d "	75
Same	Best hen	1 25
Same	2d "	75
Same	Best pullet	1 25
Same	2d "	75
Same	Best breeding pen	2 00

Class VIII—Game—Concluded.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Sumatra Game.		
Chas. Gammerdinger, Columbus, O	Best cock	$1 25
M. M. Myers, New Dover, O	2d "	75
Chas Gammerdinger, Columbus, O	Best cockerel	1 25
Same	2d "	75
M. M. Myers, New Dover, O	Best hen	1 25
Same	2d "	75
Chas. Gammerdinger, Columbus, O	Best pullet	1 25
Same	2d "	75
M. M. Myers, New Dover, O	Best breeding pen	2 00
Chas. Gammerdinger, Columbus, O	2d "	1 00
Golden Duck Wing Game.		
G. R. Baxter, Hillsdale, Mich	Best cock	1 25
Same	2d "	75
Chas. Gammerdinger, Columbus, O	Best cockerel	1 25
G. R. Baxter, Hillsdale, Mich	Best hen	1 25
Chas. Gammerdinger, Columbus, O	2d "	75
Same	Best pullet	1 25
Silver Duck Wing Game.		
Chas. Gammerdinger, Columbus, O	Best cock	1 25
Same	Best cockerel	1 25
Thos. Cory, New Carlisle, O	Best hen	1 25
G. R. Baxter, Hillsdale, Mich	2d "	75
Chas. Gammerdinger, Columbus, O	Best pullet	1 25
Red Pile Game.		
Chas. Gammerdinger, Columbus, O	Best cock	1 25
G. R. Baxter, Hillsdale, Mich	2d "	75
Chas. Gammerdinger, Columbus, O	Best cockerel	1 25
Same	Best hen	1 25
Same	2d "	75
Same	Best pullet	1 25
Same	2d "	75
Cornish Indian Game.		
F. D. Bennett, Galena, O	Best cock	1 25
Chas. Gammerdinger, Columbus, O	2d "	75
Clyde E. Smith, Ashley, O	Best cockerel	1 25
D. A. Hennis, Sunbury, O	2d "	75
F. D. Bennett, Galena, O	Best hen	1 25
Clyde E. Smith, Ashley, O	2d "	75
D. A. Hennis, Sunbury, O	Best pullet	1 25
F. D. Bennett, Galena, O	2d "	75
Same	Best breeding pen	2 00
Clyde E. Smith, Ashley, O	2d "	1 00

CLASS IX—GAME BANTAM.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
B. B. R. Bantam.		
Chas. McClave, New London, O,	Best cock	$1 25
G. R. Baxter. Hillsdale, Mich	2d "	75
Thos. Cory, New Carlisle, O	Best cockerel	1 25
Chas. Gammerdinger, Columbus, O	2d "	75
G. R. Baxter, Hillsdale, Mich	Best hen	1 25
Same	2d "	75
Same	Best pullet	1 25
Chas. Gammerdinger, Columbus, O	2d "	75
Golden Duck Wing Bantam.		
G. R. Baxter, Hillsdale, Mich	Best cock	1 25
Thos. Cory, New Carlisle, O	2d "	75
J. F. Lutz, Amanda, O	Best hen	1 25
G. R. Baxter, Hillsdale, Mich	2d "	75
Silver Duck Wing Bantam.		
G. R. Baxter, Hillsdale, Mich	Best cock	1 25
Chas Gammerdinger, Columbus, O	2d "	75
G. R. Baxter, Hillsdale, Mich	Best hen	1 25
Same	2d "	75
Chas. Gammerdinger, Columbus, O	Best pullet	1 25
Red Pile Bantam.		
Percy G. Rottman, Benton, O	Best cock.	1 25
Chas. McClave, New London, O	2d "	75
Percy G. Rottman, Benton, O	Best cockerel	1 25
Thos. Cory, New Carlisle, O	2d "	75
Chas. McClave, New London, O	Best hen	1 25
Percy G. Rottman, Benton, O	2d "	75
Thos. Cory, New Carlisle, O	Best pullet	1 25
Percy G. Rottman, Benton, O	2d "	75

CLASS X—BANTAM (Not Game).

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Golden Seabright Bantam.		
Chas. McClave, New London, O	Best cock	$1 25
Chas. Gammerdinger, Columbus, O	2d "	75
Chas. McClave, New London, O	Best cockerel	1 25
Percy G. Rottman, Benton, O	2d "	75
Chas. Gammerdinger, Columbus, O	Best hen	1 25
Chas. McClave, New London, O	2d "	75
Same	Best pullet	1 25
Thos. Cory, New Carlisle, O	2d "	75
Chas. McClave, New London, O	Best breeding pen	2 00

CLASS X—BANTAMS (Not Game)—Concluded.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Silver Seabright Bantam.		
Chas. Gammerdinger, Columbus, O.	Best cock	$1 25
Clyde E. Smith, Ashley, O.	2d "	75
P. G Rottman, Benton, O.	Best cockerel	1 25
Same	2d "	75
F. W. Landfere & Son, Bedford, O.	Best hen	1 25
P. G. Rottman, Benton, O.	2d "	75
Same	Best pullet	1 25
Same	2d "	75
Same	Best breeding pen	2 00
Same	2d " "	1 00
Buff Cochin Bantam.		
P. G. Rottman Benton, O.	Best cock	1 25
Thos. Cory, New Carlisle, O.	2d "	75
P. G. Rottman, Benton, O	Best cockerel	1 25
Chas. McClave, New London, O.	2d "	75
P. G. Rottman, Benton, O	Best hen	1 25
Chas. McClave, New London, O	2d "	75
P. G. Rottman, Benton, O.	Best pullet	1 25
Same	2d "	75
Same	Best breeding pen	2 00
H. V. Shoemaker, Ashley, O.	2d " "	1 00
White and Black Cochin Bantam.		
P. G. Rottman, Benton, O.	Best cock	1 25
G. R. Baxter, Hillsdale, Mich.	2d "	75
P. G. Rottman, Benton, O.	Best cockerel	1 25
G. R. Baxter, Hillsdale, Mich.	2d "	75
M. M. Myers, New Dover, O.	Best hen	1 25
P. G. Rottman, Benton, O.	2d "	75
Same	Best pullet	1 25
F. W. Landfere & Son, Bedford, O.	2d "	75
Black Rose Comb Bantam.		
F. W. Landfere & Son, Bedford, O.	Best cock	1 25
G. R. Baxter, Hillsdale, Mich	2d "	75
Chas. McClave, New London, O.	Best cockerel	1 25
Chas. Gammerdinger, Columbus, O.	Best hen	1 25
Chas. McClave, New London, O.	2d "	75
Chas. Gammerdinger, Columbus, O	Best pullet	1 25
Japanese Bantam.		
P. G. Rottman, Benton, O.	Best cock	1 25
F. W. Landfere & Son, Bedford, O.	2d "	75
Chas. Gammerdinger, Columbus, O.	Best cockerel	1 25
Same	Best hen	1 25
P. G. Rottman, Benton, O.	2d "	75
Chas. Gammerdinger, Columbus, O.	Best pullet	1 25

CLASS XI—TURKEYS.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Chas. McClave, New London, O	Best bronze turkeys, old pair	$2 00
M. M. Myers, New Dover, O	2d best bronze turkeys, old pair	1 00
Chas. McClave, New London, O	Best bronze turkeys, young pair	2 00
M. M. Myers. New Dover, O	2d best bronze turkeys, young pair	1 00
Thos. Cory, New Carlisle, O	Best white turkeys, old pair	2 00
Chas McClave, New London, O.	2d best white turkeys old pair	1 00
Same	Best white turkeys, young pair	2 00
J. F Lutz, Amanda O	2d best white turkeys, young pair	1 00
G. R. Baxter, Hillsdale, Mich	Best buff turkeys, old pair	2 00
J. F. Lutz, Amanda. O	2d best buff turkeys, old pair	1 00
M. M. Myers, New Dover. O	Best buff turkeys, young pair	2 00
G. R. Baxter, Hillsdale. Mich	2d best buff turkeys, young pair	1 00
J. F. Lutz. Amanda O	Best Narraganset turkeys, old pair	2 00
M. M. Myers. New Dover, O	2d best Narraganset turkeys, old pair	1 00
Same	Best Narraganset turkeys. young pair	2 00
Chas. McClave. New London, O	Best black turkeys. old pair	2 00
M. M. Myers, New Dover, O	2d best black turkeys, old pair	1 00
Same	Best black turkeys, young pair	2 00
Chas. McClave, New London. O.	2d best black turkeys. young pair	1 00
Same	Best slate turkeys old pair	2 00
M. M. Myers New Dover, O	2d best slate turkeys, old pair	1 00
Same	Best slate turkeys, young pair	2 00
Chas. McClave, New London, O	2d best slate turkeys. young pair	1 00
Robert Bell, Ashley, O	Best wild turkeys, old pair	2 00
Same	Best wild turkeys, young pair	2 00

AQUATIC DIVISION.

CLASS XII—DUCKS.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Clyde E. Smith, Ashley, O	Best Pekin ducks, old pair	$2 00
Chas. McClave, New London, O	2d best Pekin ducks, old pair	1 00
J. T. Hanawalt, Delaware, O	Best Pekin ducks, young pair	2 00
Chas. McClave, New London, O	2d best Pekin ducks, young pair	1 00
Same	Best Aylesbury ducks, old pair	2 00
G R. Baxter, Hillsdale, Mich	2d best Aylesbury ducks, old pair	1 00
J. H. Cale, Berkshire, O	Best Aylesbury ducks. young pair	2 00
M. M. Myers. New Dover, O	Best Rouen ducks. old pair	2 00
Chas. McClave, New London, O	2d best Rouen ducks. old pair	1 00
Clyde E. Smith, Ashley, O	Best Rouen ducks, young pair	2 00
Chas. McClave, New London, O	2d best Rouen ducks. young pair	1 00
Same	Best Cayuga ducks old pair	2 00
M. M. Myers, New Dover, O	2d best Cayuga ducks. old pair	1 00
Same	Best Cayuga ducks. young pair	2 00
Chas. McClave. New London, O	Best crested white ducks. old pair	2 00
G. R. Baxter, Hillsdale, Mich	2d best crested white ducks, old pair	1 00
Chas. McClave, New London, O	Best crested white ducks. young pair	2 00
M. M. Myers, New Dover, O	2d best crested white ducks young pr	1 00
Chas. McClave, New London, O	Best gray call ducks old pair	2 00
M. M. Myers, New Dover, O	2d best gray call ducks old pair	1 00
Chas. McClave, New London, O	Best gray call ducks. young pair	2 00
G. R. Baxter, Hillsdale, Mich	2d best gray call ducks, young pair	1 00
M. M. Myers. New Dover, O	Best white call ducks. old pair	2 00
Chas. Gammerdinger, Columbus, O	2d best white call ducks, old pair	1 00
Chas. McClave. New London, O	Best white call ducks. young pair	2 00
M. M. Myers, New Dover, O	2d best white call ducks, young pair	1 00
Chas. McClave, New London, O	Best Muscovey colored ducks, old pr	2 00
M. M. Myers, New Dover, O	2d best Muscovey colored ducks old pr	1 00
Same	Best Muscovey color'd du'ks young pr	2 00
Chas. McClave, New London, O	Best Muscovey white ducks. old pair	2 00
M. M. Myers, New Dover, O	2d best Muscovey white ducks, old pr	1 00
Same	Best Muscovey white d'ks, young pair	2 00

Class XIII—Geese.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Chas. McClave, New London, O.	Best Toulouse geese, old pair	$2 00
Chas. Gammerdinger, Columbus, O.	2d best Toulouse geese, old pair	1 00
M. M. Myres, New Dover, O.	Best Toulouse geese, young pair	2 00
J. F. Lutz, Amanda, O.	2d best Toulouse geese, young pair	1 00
Chas. McClave, New London, O.	Best Embden geese, old pair	2 00
Thos. Cory, New Carlisle, O.	2d best Embden geese, old pair	1 00
M. M. Myres, New Dover, O.	Best Embden geese, young pair	2 00
Chas. McClave, New London, O.	2d best Embden geese, young pair	1 00
J. H. Cole, Berkshire, O.	2d best African geese, old pair	1 00
Same	2d best African geese, young pair.	1 00
Chas. McClave, New London, O.	Best Brown Chinese geese, old pair	2 00
M. M. Myres, New Dover, O.	2d best Brown Chinese geese, old pair	1 00
Same	Best Brown Chinese geese, young pr.	2 00
Chas. McClave, New London, O.	Best White geese, old pair	2 00
M. M. Myres, New Dover, O.	2d best White geese, old pair	1 00
Chas. McClave, New London, O.	Best White geese, young pair	2 00
Same	2d best White geese, young pair	1 00
Same	Best Wild geese, old pair	2 00
Thos. Cory, New Carlisle, O.	2d best Wild geese, old pair	1 00
Chas McClave, New London, O.	Best Wild geese, young pair.	2 00
J. F. Lutz, Amanda, O.	2d best Wild geese, young pair	1 00

Class XIV—Ornamental.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Chas. McClave, New London, O.	Best pair Pea Fowls	$2 00
J. F. Lutz, Amanda, O.	2d best pair Pea Fowls	1 00
Chas. McClave, New London, O.	Best pair Ring Neck Pheasants	2 00
J. F. Lutz, Amanda, O.	Best pair Golden Pheasants	2 00

Class XV—Pigeons.

Owner's Name and Postoffice.	Kind of Fowl	Amount.
J. C. Brigel, Columbus, O.	Five pr. Homing Pigeons, hatch of '98	Medal.

CLASS COLLECTIONS.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Chas. Gammerdinger, Columbus, O	Collection in American class	$3 00
Same	" Asiatic class	3 00
Same	" Mediterranean class	3 00
Mrs. E. Gammerdinger, Columbus, O	" Polish class	3 00
Julius Frank, Akron, O	" Hamburg class	3 00
Chas. Gammerdinger, Columbus, O	" Games & Game Bantams	3 00
P. G. Rottman, Benton, O	" Bantams not Game	3 00
Chas. McClave, New London, O	" of Turkeys	3 00
Same	For finest collection of Geese	3 00
Same	" Ducks	3 00
Same	Collection and variety of poultry	Medal
The Saumening Hatcher Co., Springfield, O	Incubator in operation	Medal
Same	Brooder in operation	Medal

SIXTH DEPARTMENT.

Farm Products—S. H. Ellis, Member in Charge.

Owner's Name and Postoffice.	Name of Article.	Amount.
John Pearce, Fields Corners, O	Best peck of Democrat wheat	$2 00
J. L. Keckly, Marysville, O	2d best peck of Democrat wheat	1 00
F. M. Whipps, Byhalia, O	Best peck of White Leader wheat	2 00
Albert Pierce, North Ridgeville, O	2d beet peck of White Leader wheat	1 00
F. M. Whipps, Byhalia, O	Best peck of Fulcaster wheat	2 00
J. L. Keckley, Marysville, O	2d best peck of Fulcaster wheat	1 00
Same	Best peck of Fultz wheat	2 00
F. M. Whipps, Byhalia, O	2d best peck of Fultz wheat	1 00
John Pearce, Fields Corners, O	Best peck of Golden Cross wheat	2 00
Albert Peace, North Ridgeville, O	2d best peck of Golden Cross wheat	1 00
F. M. Whipps, Byhalia, O	Best peck of Jones' Winter Fife wheat	2 00
D. F. Corwin, Springboro O	2d best peck of Jones' Winter Fife wheat	1 00
J. L. Keckley, Marysville O	Best peck of Mediterranean wheat	2 00
D. F. Corwin, Springboro, O	2d best peck of Mediterranean wheat	1 00
J. L. Keckley, Marysville, O	Best peck of Nigger wheat	2 00
F. M. Whipps, Byhalia, O	2d best peck of Nigger wheat	1 00
Same	Best peck of Ontario Wonder wheat	2 00
M. J. Leavitt, Mutual, O	2d best peck of Ontario Wonder wheat	1 00
John Pearce, Fields Corners O	Best peck of Poole wheat	2 00
Albert Pearce, North Ridgeville, O	2d best peck of Poole wheat	1 00
S. B. McFarland, Sunbury, O	Best peck of Rudy wheat	2 00
J. L. Keckley, Marysville, O	2d best peck of Rudy wheat	1 00
Same	Best peck of Royal Australian wheat	2 00
F. M. Whipps, Byhalia, O	2d best peck of Royal Australian wheat	1 00
J. L. Keckley, Marysville, O	Best peck of Valley wheat	2 00
F. M. Whipps. Byhalia, O	2d best peck of Valley wheat	1 00
John Pearce, Fields Corners, O	Best peck of Velvet chaff wheat	2 00
J. L. Keckley, Marysville, O	2d best peck of Velvet Chaff wheat	1 00
Same	Best peck of Wyandotte Red wheat	2 00
D. F. Corwin, Springboro, O	2d best peck of Wyandotte Red wheat	1 00
F. M. Whipps, Byhalia, O	Best peck of Black Norway oats	1 50
J. L. Keckley, Marysville, O	2d best peck of Black Norway oats	75
I. V. Keckley, Marysville, O	Best peck of Black Tartarian oats	1 50
J. L. Keckley, Marysville, O	2d best peck of Black Tartarian oats	75
Same	Best peck of Drogheda oats	1 50
M. J. Leavitt, Mutual, O	2d best peck of Drogheda oats	75
F. M. Whipps Byhalia, O	Best peck of Improved American oats	1 50
J. L. Keckley, Marysville, O	2d best peck of Improved American oats	75
Same	Best peck of Race Horse oats	1 50
F. M. Whipps, Byhalia, O	2d best peck of Race Horse oats	75
J. L. Keckley, Marysville, O	Best peck of Seizure oats	1 50
F. M. Whipps, Byhalia, O	2d best peck of Seizure oats	75
J. L. Keckley, Marysville, O	Best peck of Welcome oats	1 50
F. M. Whipps, Byhalia, O	2d best peck of Welcome oats	75
Same	Best peck of White Wonder oats	1 50
John Pearce, Fields Corners, O	2d best peck of White Wonder oats	75
J. L. Keckley, Marysville, O	Best peck of White California oats	1 50
F. M. Whipps. Byhalia, O	2d best peck of White California oats	75
Same	Best peck of White Superior Scotch oats	1 50
M. J. Leavitt, Mutual, O	2d best peck of White Superior Scotch oats	75
J. L. Keckley, Marysville, O	Best peck of Winter rye	2 00
F. M. Whipps. Byhalia. O	2d best peck of Winter rye	1 00
D. F. Corwin, Springboro, O	Best peck of Winter barley	2 00
J. L. Keckley, Marysville, O	2d best peck of Winter barley	1 00
D. F. Corwin, Springboro, O	Best peck of Spring barley	2 00
F. M. Whipps, Byhalia, O	2d best peck of Spring barley	1 00
Same	Best peck of Silver Hull buckwheat	2 00
J. L. Keckley, Marysville, O	2d best peck of Silver Hull buckwheat	1 00
F. M. Whipps, Byhalia, O	Best peck of Japanese buckwheat	2 00
D. F. Corwin, Springboro O	2d best peck of Japanese buckwheat	1 00
I. V. Keckley, Marysville, O	Best peck of Russian flax seed	2 00
J. L. Keckley, Marysville, O	2d best peck of Russian flax seed	1 00
D F. Corwin. Springboro, O	Best peck of Common flax seed	2 00
A. H. Powell, Newark, O	2d best peck of Common flax seed	1 00
F. M. Whipps, Byhalia, O	Best peck of Timothy seed	2 00
M. J. Leavitt, Mutual, O	2d best peck of Timothy seed	1 00
F. M. Whipps, Byhalia, O	Best peck of Kentucky blue grass seed	2 00
D. F. Corwin, Springboro, O	2d best peck of Kentucky blue grass seed	1 00
John Pearce, Fields Corners, O	Best peck of Mammoth clover seed	2 00
A. H. Powell, Newark, O	2d best peck of Mammoth clover seed	1 00
Same	Best peck of Common clover seed	2 00
Lyman Shumard, Springboro, O	2d best peck of Common clover seed	1 00
John Pearce, Fields Corners, O	Best peck of Crimson clover seed	2 00
A. H. Powell, Newark, O	2d best peck of Crimson clover seed	1 00
F. M. Whipps, Byhalia, O	Best peck of Orchard grass seed	2 00

Farm Products—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
D. F. Corwin, Springboro, O.	2d best peck of Orchard grass seed	$1 00
F. M. Whipps, Byhalia, O.	Best peck of Millet seed	2 00
J. L. Keckley, Marysville, O.	2d best peck of Millet seed	1 00
John Pearce, Fields Corners, O.	Best peck of Hungarian grass seed	2 00
J. L. Keckley, Marysville, O.	2d best peck of Hungarian grass seed	1 00
D. F. Corwin, Springboro, O.	Best display of grain in straw and threshed	5 00
J. L. Kechley, Marysville, O.	2d best display of grain in straw and threshed	3 00
L. C. Rice, Springboro, O.	Best display of grasses and sedges	3 00
D. F. Corwin, Springboro, O.	2d best display of grasses and sedges	2 00
Shelled beans and peas.		
Albert Pearce, North Ridgeville, O.	Best two quarts of Lima beans	1 00
F. M. Whipps, Byhalia, O.	2d best two quarts of lima beans	50
Albert Pearce, North Ridgeville, O.	Best two quarts of marrowfat beans	1 00
John Pearce, Fields Corners, O.	2d best two quarts of marrowfat beans	50
J. L. Keckley, Marysville, O.	Best two quarts of navy beans	1 00
A. H. Powell, Newark, O.	2d best two quarts of navy beans	50
Same	Best two quarts of golden wax beans	1 00
W. Harris, Westerville O.	2d best two quarts of golden wax beans	50
D. F. Corwin, Springboro, O.	Best two quarts of kidney beans	1 00
F. M. Whipps, Byhalia, O.	2d best two quarts of kidney beans	50
Same	Best half peck of marrowfat peas	2 00
J. L. Keckley, Marysville, O.	2d best half peck of marrowfat peas	1 00
F. M. Whipps, Byhalia, O.	Best half peck of Canada field peas	2 00
J. L. Keckley, Marysville, O.	2d best half peck of Canada field peas	1 00
Tobacco.		
D. F. Corwin, Springboro, O.	Best four hands Ohio seed leaf	3 00
Lyman Shumard, Springboro, O.	2d best four hands Ohio seed leaf	1 00
D. F. Corwin, "	Best four hands white burley	3 00
Lyman Shumard, "	2d best four hands white burley	1 00
D. F. Corwin, "	Best four hands Little Dutch	3 00
Lyman Shumard, "	2d best four hands Little Dutch	1 00
D. F. Corwin, "	Best four hands Zimmer's Spanish	3 00
Lyman Shumard, "	2d best four hands Zimmer's Spanish	1 00
Corn, etc.		
J. L. Keckley, Marysville, O.	Best display yellow field corn	5 00
D. F. Corwin, Springboro, O.	2d best display yellow field corn	3 00
Same	Best display white field corn	5 00
F. M. Whipps, Byhalia, O.	2d best display white field corn	3 00
Same	Best display sweet corn	3 00
J. L. Keckley, Marysville, O.	2d best display sweet corn	2 00
Same	Best display pop corn	3 00
F. M. Whipps, Byhalia, O.	2d best display pop corn	2 00
D. F. Corwin, Springboro, O.	Best display in variety of corn of all kinds	10 00
J. L Keckley, Marysville, O.	2d best display in variety of corn of all kinds	5 00
D. F. Corwin, Springboro, O.	Best six stalks of corn	2 00
John Pearce, Fields Corners, O.	2d best six stalks of corn	1 00
F. M. Whipps, Byhalia, O.	Best six stalks of sweet corn	2 00
A. H. Powell, Newark, O.	2d best six stalks of sweet corn	1 00
Same	Best six stalks of broom corn	2 00
F. M. Whipps, Byhalia, O	2d best six stalks of broom corn	1 00
Same	Best six stalks of ensilage corn	2 00
A. H. Powell, Newark, O.	2d best six stalks of ensilage corn	1 00
Same	Best six stalks of pop corn	2 00
F. M. Whipps, Byhalia, O.	2d best six stalks of pop corn	1 00
D. F. Corwin, Springboro, O.	Best display of corn on the stalk	5 00
F. M Whipps, Byhalia, O.	2d best display of corn on the stalk	3 00
Same	Best specimen of dried corn	2 00
M. J. Leavitt, Mutual, O.	2d best specimen of dried corn	1 00
D. F. Corwin, Springboro, O.	Best twenty pounds of broom corn	2 00
Albert Pearce, North Ridgeville, O.	2d best twenty pounds of broom corn	1 00
Cheese and Butter.		
Isaly Bros., Columbus, O.	Best display of cheese	10 00
J. V. Coffey, Mechanicsburg, O.	2d best display of cheese	5 00
Mary F. Maxwell, Reynoldsburg, O.	Best package of dairy butter	5 00
Mrs. A. W. Graham, Reynoldsburg, O.	Best exhibition of dairy butter	8 00
Mrs. Mary F. Maxwell, Reynoldsburg, O.	2d best exhibition of dairy butter	5 00
Same	Best exhibition of creamery butter	8 00
Mrs. A. W. Graham, Reynoldsburg, O.	2d best exhibition of creamery butter	5 00

FARM PRODUCTS—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
Potatoes and other root products.		
F. M. Whipps, Byhalia, O.	Best peck American Giant	$1 50
J. L. Keckley, Marysville, O.	2d best peck American Giant	1 00
E. G. Stockman, Prospect, O.	Best peck American Wonder	1 50
A. H. Powell, Newark, O.	2d best peck American Wonder	1 00
J. L. Keckley, Marysville, O.	Best peck Alexander Prolific	1 50
F. M. Whipps, Byhalia, O.	2d best peck Alexander Prolific.	1 00
M. J. Leavitt, Mutual, O.	Best peck Beauty of Hebron	1 50
C. W. Kent & Sons, Newark, O.	2d best peck Beauty of Hebron	1 00
M. J. Leavitt, Mutual O.	Best peck Burbank Seedling	1 50
A. H. Powell, Newark, O.	2d best peck Burbank Seedling	1 00
Same	Best peck Brownell's Best	1 50
John Pearce, Fields Corners, O.	2d best peck Brownell's Best	1 00
J. L. Keckley, Marysville, O	Best peck Banner	1 50
John Pearce, Fields Corners, O	2d best peck Banner	1 00
J. L. Keckley, Marysville, O.	Best peck Bliss Triumph	1 50
A. H. Powell, Newark, O.	2d best peck Bliss Triumph	1 00
J. L. Keckley, Marysville, O.	Best peck Clark's No. 1	1 50
F. M. Whipps, Byhalia, O.	2d best peck Clark's No. 1	1 00
John Pearce, Fields Corners, O.	Best peck Carmen No. 3	1 50
J. L. Keckley, Marysville, O.	2d best peck Carmen No. 3	1 00
A. H. Powell, Newark, O.	Best peck Chicago Market	1 50
J. L. Keckley, Marysville, O.	2d best peck Chicago Market	1 00
Same	Best peck Dunmore Seedling	1 50
A. H. Powell, Newark, O.	2d best peck Dunmore Seedling	1 00
E. G. Stockman, Prospect, O.	Best peck Early Rose	1 50
F. M. Whipps, Byhalia, O.	2d best peck Early Rose	1 00
Same	Best peck Early Ohio.	1 50
A. H. Powell, Newark, O.	2d best peck Early Ohio	1 00
Same	Best peck Early Puritan	1 50
J. L. Keckley, Marysville, O.	2d best peck Early Puritan	1 00
John Pearce, Fields Corners, O.	Best peck Early Mayflower	1 50
F. M. Whipps, Byhalia, O.	2d best peck Early Mayflower	1 00
Same	Best peck Empire State	1 50
C. W. Kent & Sons, Newark, O.	2d best peck Empire State	1 00
E. G. Stockman, Prospect, O.	Best peck Freeman	1 50
M. J. Leavitt, Mutual, O	2d best peck Freeman	1 00
F. M. Whipps, Byhalia, O.	Best peck Jumbo.	1 50
A H. Powell, Newark, O.	2d best peck Jumbo	1 00
J. L. Keckley, Marysville, O.	Best peck Green Mountain	1 50
A. H. Powell, Newark. O.	2d best peck Green Mountain	1 00
J. L. Keckley, Marysville, O.	Best peck Late Rose	1 50
F. M. Whipps, Byhalia, O.	2d best peck Late Rose	1 00
J. L. Keckley, Marysville, O.	Best peck Lee's Favorite	1 50
A. H Powell, Newark, O.	2d best peck Lee's Favorite	1 00
J. L. Keckley, Marysville. O.	Best peck Monroe Seedling	1 50
A. H. Powell, Newark, O	2d best peck Monroe Seedling.	1 00
Same	Best peck Potentate	1 50
J. L. Keckley, Marysville, O.	2d best peck Potentate	1 00
Same	Best peck Polaris	1 50
M. J. Leavitt, Mutual. O.	2d best peck Polaris.	1 00
F. M. Whipps, Byhalia. O.	Best peck Puritan	1 50
A. H. Powell, Newark, O.	2d best peck Puritan	1 00
J. H. Keckley, Marysville, O.	Best peck Queen of the Valley	1 50
F. M. Whipps, Byhalia. O.	2d best peck Queen of the Valley	1 00
J. L. Keckley, Marysville, O.	Best peck Rural New Yorker No. 2	1 50
John Pearce, Fields Corners, O.	2d best peck Rural New Yorker No. 2	1 00
M. J. Leavitt, Mutual, O.	Best peck Seneca Beauty	1 50
A. H. Powell, Newark, O.	2d best peck Seneca Beauty	1 00
F. M. Whipps, Byhalia, O.	Best peck Sir William	1 50
A. H. Powell, Newark, O.	2d best peck Sir William	1 00
F. M. Whipps, Byhalia, O.	Best peck Summit	1 50
A. H. Powell, Newark, O.	2d best peck Summit	1 00
J. L. Keckley, Marysville, O.	Best peck State of Maine	1 50
F. M. Whipps, Byhalia, O.	2d best peck State of Maine	1 00
A. H. Powell, Newark, O.	Best peck Vaughn	1 50
J. L. Keckley, Marysville, O.	2d best peck Vaughn	1 00
Same	Best peck White Elephant	1 50
A. H. Powell, Newark, O.	2d best peck White Elephant	1 00
Same	Best peck White Star	1 50
F. M. Whipps, Byhalia, O.	2d best peck White Star	1 00
A. H. Powell, Newark, O.	Best peck new variety	3 00
E. G. Stockman, Prospect, O.	2d best peck new variety	2 00
A. H. Powell, Newark, O.	Best display of seedling potatoes	3 00
John Pearce, Fields Corners, O.	2d best display of seedling potatoes	2 00

FARM PRODUCTS—Continued.

Owner's Name and Postoffice.	Kind of Article.	Amount.
Potatoes and other root products—Continued		
A. H. Powell, Newark, O.	Best display of Irish potatoes	$10 00
E. G. Stockman, Prospect, O.	2d best display of Irish potatoes	6 00
A. H. Powell, Newark, O.	Best peck of yellow sweet potatoes	1 50
J. L. Keckley, Marysville, O.	2d best peck of yellow sweet potatoes	1 00
E. G. Stockman, Prospect, O.	Best peck of red sweet potatoes	1 50
Same	Best peck of red yams	1 50
Theodore Neff, Bellaire, O.	Best peck of white yams	1 50
E. G. Stockman, Prospect, O.	2d best peck of white yams	1 00
A. H. Powell, Newark, O.	Best display of sweet potatoes and yams	5 00
Theodore Neff, Bellaire, O.	2d best display of sweet potatoes and yams	3 00
J. P. Grubb, Mortimer, O.	Best 12 parsnips	2 00
J. L. Keckley, Marysville, O.	2d best 12 parsnips	1 00
John Pearce, Field's Corners, O.	Best 12 Danver's carrots	2 00
A. H. Powell, Newark, O.	2d best 12 Danver's carrots	1 00
John Pearce, Field's Corners, O.	Best 12 long orange carrots	2 00
C. W. Kent & Sons, Newark, O.	2d best 12 long orange carrots	1 00
John Pearce, Field's Corners, O.	Best 12 stump rooted carrots	2 00
A. H. Powell, Newark, O.	2d best 12 stump rooted carrots	1 00
John Pearce, Field's Corners, O.	Best display of carrots	3 00
C. W. Kent & Sons, Newark, O.	2d best display of carrots	2 00
F. M. Whipps, Byhalia, O.	Best 12 roots salsify	2 00
J. P. Grubbs, Mortimer, O.	2d best 12 roots salsify	1 00
A. H. Powell, Newark, O.	Best 6 eclipse beets	1 50
J. L. Keckley, Marysville, O.	2d best 6 eclipse beets	75
J. P. Grubb, Mortimer, O.	Best 6 extra early Bassino beets	1 50
John Pearce, Field's Corners, O.	2d best 6 extra early Bassino beets	75
J. L. Keckley, Marysville, O.	Best 6 blood turnip beets	1 50
F. M. Whipps, Byhalia, O.	2d best 6 blood turnip beets	75
John Pearce, Field's Corners, O.	Best 6 long red mangel wurzels	1 50
J. P. Grubb, Mortimer O.	2d best 6 long red mangel wurzels	75
Theodore Neff, Bellaire, O.	Best 6 Kohlrabi	1 50
J. L. Keckley, Marysville, O.	2d best 6 Kohlrabi	75
F. M. Whipps, Byhalia, O.	Best 6 yellow mangel wurzels	1 50
A. H. Powell, Newark, O.	2d best 6 yellow mangel wurzels	75
John Pearce, Field's Corners, O.	Best 6 golden tankard mangel wurzels	1 50
J. L. Keckley, Marysville, O.	2nd best 6 golden tankard mangel wurzels	75
F. M. Whipps, Byhalia, O.	Best display of beets	5 00
J. L. Keckley, Marysville, O.	2d best display of beets	3 00
John Pearce, Field's Corners, O.	Best 6 rutabagas	1 50
Theodore Neff, Bellaire, O.	2d best 6 rutabagas	75
F. M. Whipps, Byhalia, O.	2d best peck purple top turnips	75
Same	2d best peck white top turnips	75
M. J. Leavitt, Mutual, O.	Best peck red Weathersfield onions	1 50
F. M. Whipps, Byhalia, O.	2d best peck red Weathersfield onions	75
M. J. Leavitt, Mutual, O.	Best peck red globe onions	1 50
J. L. Keckley, Marysville, O.	2d best peck red globe onions	75
A. H. Powell, Newark, O.	Best peck yellow Danvers onions	1 50
F. M. Whipps, Byhalia, O.	2d best peck yellow Danver's onions	75
A. H. Powell, Newark, O.	Best peck yellow globe onions	1 50
J. L. Keckley, Marysville, O.	2d best peck yellow globe onions	75
Same	Best peck white globe onions	1 50
F. M. Whipps, Byhalia, O.	2d best peck white globe onions	75
Jonn Pearce, Field's Corners, O.	Best peck giant Rocca onions	1 50
C. W. Kent & Sons, Newark, O.	2d best peck giant Rocca onions	75
J. L. Keckley, Marysville, O.	Best peck potato onions	1 50
John Pearce, Field's Corners, O.	2d best peck potato onions	75
J. L. Keckley, Marysville, O.	Best peck of prize-taker onions	1 50
C. W. Kent & Sons, Newark, O.	2d best peck of prize-taker onions	75
Same	Best display of onions	5 00
A. H. Powell, Newark, O.	2d best display of onions	3 00
Vegetables.		
A. H. Powell, Newark, O.	Best peck Acme tomatoes	1 50
C. W. Kent & Sons, Newark. O.	2d best peck Acme tomatoes	75
J. P. Grubb, Mortimer, O.	Best peck Atlantic Prize tomatoes	1 50
A. H. Powell, Newark, O.	2d best peck Atlantic Prize tomatoes	75
Same	Best peck Buckeye State tomatoes	1 50
E. G. Stockman, Prospect, O.	2d best peck Buckeye State tomatoes	75
A. H. Powell, Newark, O.	Best peck Cumberland red tomatoes	1 50
J. P. Grubb, Mortimer, O.	2d best peck Cumberland red tomatoes	75
A. H. Powell, Newark, O.	Best peck Dwarf Champion tomatoes	1 50
C. W. Kent & Sons, Newark, O.	2d best peck Dwarf Champion tomatoes	75
F. M. Whipps, Byhalia, O.	Best peck Favorite tomatoes	1 50
A. H. Powell, Newark, O.	2d best peck Favorite tomatoes	75

Farm Products—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
Vegetables—Concluded.		
J. P. Grubb, Mortimer, O.	Best peck Golden Queen tomatoes	$1 50
C. W. Kent & Sons, Newark, O.	2d best peck Golden Queen tomatoes	75
J. P. Grubb, Mortimer, O.	Best peck Ignotum tomatoes	1 50
A. H. Powell, Newark, O.	2d best peck Ignotum tomatoes	75
Same	Best peck Livingston's Beauty	1 50
E. G. Stockman, Prospect, O.	2d best peck Livingston's Beauty	75
J P. Grubb, Mortimer, O.	Best peck Perfection	1 50
A. H. Powell, Newark, O	2d best peck Perfection	75
Same	Best peck Ponderosa	1 50
F. M. Whipps, Byhalia, O.	Best peck The Stone	1 50
A. H. Powell, Newark, O.	2d best peck The Stone	75
Same	Best display of tomatoes	4 00
C. W. Kent & Sons, Newark, O.	2d best display of tomatoes	2 00
Same	Best 4 heads All Seasons cabbage	1 50
J. L. Keckley, Marysville, O.	2d best 4 heads All Seasons cabbage	75
Same	Best 4 heads Dutch winter cabbage	1 50
C. W. Kent & Sons, Newark, O.	2d best 4 heads Dutch winter cabbage	75
A. H. Powell, Newark, O.	Best 4 heads Early Jersey	1 50
C. W. Kent & Sons, Newark, O.	2d best 4 heads Early Jersey	75
F. M. Whipps, Byhalia, O.	Best 4 heads Wakefield	1 50
C. W. Kent & Sons, Newark, O.	2d best 4 heads Wakefield	75
Same	Best 4 heads Flat Dutch	1 50
A. H. Powell, Newark, O.	2d best 4 heads Flat Dutch	75
C. W. Kent & Sons, Newark, O.	Best 4 heads Fottler's Improved	1 50
F. M. Whipps, Byhalia, O.	2d best 4 heads Fottler's Improved	75
Same	Best 4 heads Large Wakefield	1 50
C. W. Kent & Sons, Newark, O.	2d best 4 heads Large Wakefield	75
Same	Best 4 heads Marblehead	1 50
A. H. Powell, Newark, O.	2d best 4 heads Marblehead	75
F. M. Whipps, Byhalia, O.	Best 4 heads Drumhead	1 50
A. H. Powell, Newark, O.	2d best 4 heads Drumhead	75
J. L. Keckley, Marysville, O.	Best 4 heads Sure Head	1 50
F. M. Whipps, Byhalia, O.	2d best 4 heads Sure Head	75
Same	Best 4 heads Winnigstaat	1 50
A. H. Powell, Newark, O.	2d best 4 heads Winnigstaat	75
J. L. Keckley, Marysville, O.	Heaviest head of cabbage	1 50
F. M. Whipps, Byhalia, O.	2d heaviest head of cabbage	75
A. H. Powell, Newark, O.	Best 4 heads Lenormand's cauliflower	1 50
John Pearce, Field's Corners, O.	Best display of celery	2 00
A. H. Powell, Newark, O.	2d best display of celery	1 00
Same	Best display of peppers	2 00
J. P. Grubb, Mortimer O.	2d best display of peppers	1 00
Same	Best 3 Boston Marrow squashes	1 50
C. W. Kent & Sons, Newark, O.	2d best 3 Boston Marrow squashes	75
A H. Powell, Newark, O.	Best 3 Brazil Sugar squashes	1 50
C. W. Kent & Sons, Newark, O.	Best 3 Essex Hybrid squashes	1 50
A. H. Powell, Newark, O.	2d best 3 Essex Hybrid squashes	75
F. M. Whipps, Byhalia, O.	Best 3 Ford Hook squashes	1 50
A. H. Powell, Newark, O.	2d best 3 Ford Hook squashes	75
C. W. Kent & Sons, Newark, O.	Best 3 Giant Yellow Crookneck squashes	1 50
W. Harris, Westerville, O.	2d best 3 Giant Yellow Crookneck squashes	75
J. P. Grubb, Mortimer, O.	Best 3 Hubbard squashes	1 50
A. H. Powell, Newark, O.	2d best 3 Hubbard squashes	75
Same	Best 3 Perfect Gem squashes	1 50
C. W. Kent & Sons, Newark, O.	Best 3 Pike's Peak squashes	1 50
J. L. Keckley, Marysville, O.	2d best 3 Pike's Peak squashes	75
C. W. Kent & Sons, Newark, O.	Best 3 Sibley squashes	1 50
A. H. Powell, Newark, O.	Best 3 White Chestnut squashes	1 50
C. W. Kent & Sons, Newark, O.	2d best 3 White Chestnut squashes	75
Same	Best display of squashes	4 00
A. H. Powell, Newark, O.	2d best display of squashes	2 00
J. L. Keckley, Marysville, O.	Heaviest squash	1 50
E. G. Stockman, Prospect, O.	2d heaviest squash	75
Albert Pearce, North Ridgeville, O.	Best 3 common pumpkins	1 50
W. Harris Westerville, O.	2d best 3 common pumpkins	75
J. L. Keckley Marysville, O.	Best 3 sweet pumpkins	1 50
J. P. Grubb, Mortimer, O.	2d best 3 sweet pumpkins	75
Same	Largest pumpkin	1 50
W. Harris, Westerville, O.	2d largest pumpkin	75
A. H Powell, Newark, O	Best display of pumpkins	2 00
J. P. Grubb, Mortimer, O.	2d best display of pumpkins	1 00
A H. Powell, Newark, O.	Best 3 Cuban Queen watermelons	1 50
C. W. Kent & Sons, Newark, O.	2d best 3 Cuban Queen watermelons	75

FARM PRODUCTS—Concluded.

Owner's Name and Postoffice.	Name of Article,	Amount.
Vegetables—Concluded.		
C. W. Kent and Sons, Newark, O	Best 3 ice cream watermelons	$1 50
A. H. Powell, Newark, O	2d best 3 ice cream watermelons	75
Same	Best 3 Kolb Gem watermelons	1 50
J. P. Grubb, Mortimer, O	2d best 3 Kolb Gem watermelons	75
A. H. Powell, Newark, O	Best 3 Florida Favorite watermelons	1 50
J. P. Grubb, Mortimer, O	2d best 3 Florida Favorite watermelons	75
A. H. Powell, Newark, O	Best 3 Phinney's early watermelons	1 50
J. L. Keckley, Marysville, O	2d best 3 Phinney's early watermelons	75
C. W. Kent and Sons, Newark, O	Best 3 Peerless watermelons	1 50
A. H. Powell, Newark, O	2d best 3 Peerless watermelons	75
C. W. Kent and Sons, Newark, O	Best 3 Sweet Heart watermelons	1 50
J. P. Grubb, Mortimer, O	2d best 3 Sweet Heart watermelons	75
A. H. Powell, Newark, O	Best 3 any other variety	1 50
F. M. Whipps, Byhalia, O	2d best 3 any other variety	75
A. H. Powell, Newark, O	Heaviest watermelon	1 50
F. M. Whipps, Byhalia, O	2d heaviest watermelon	75
J. P. Grubb, Mortimer, O	Best display of watermelons	4 00
C. W. Kent and Sons, Newark, O	2d best display of watermelons	2 00
J. L. Keckley, Marysville, O	Best display of muskmelons	4 00
F. M. Whipps, Byhalia, O	2d best display of muskmelons	2 00
J. P. Grubb, Mortimer, O	Best display of cucumbers	2 00
F. M. Whipps, Byhalia, O	2 best display of cucumbers	1 00
J. P. Grubb, Mortimer, O	Best 3 purple egg plants	2 00
F. M. Whipps, Byhalia, O	2d best 3 purple egg plants	1 00
W. Harris, Westervile, O	Best 12 ears early sweet corn	1 50
J. P. Grubb, Mortimer, O	2d best 12 ears early sweet corn	75
F. M. Whipps, Byhalia, O	Best 12 ears late sweet corn	1 50
A. H. Powell, Newark, O	2d best 12 ears late corn	75
C. W. Kent and Sons, Newark, O	Best display of vegetables	20 00
J. P. Grubb, Mortimer, O	2d best display of vegetables	10 00
County exhibit of farm products.		
J. L. Keckley, Marysville, O	Best rep. county exhibit of farm products	75 00
D. F. Corwin, Springboro, O	2d best rep. county exhibit of farm products	50 00
A. H. Powell, Newark, O	3d best rep. county exhibit of farm products.	35 00
W. D. Whipps, Marion, O	4th best rep. county exhibit of farm products	25 00
To the above Armour and Co. of Chicago, Ill., added $100.00, as follows:		
J. L. Keckley, Marysville, O	To county exhibit receiving first award	50 00
D. F. Corwin, Springboro, O	To county exhibit receiving second award	30 00
A. H. Powell, Newark, O	To county exhibit receiving third award	20 00
Bees and honey.		
J. C. Boynton, Delaware, O	Best display of comb honey	10 00
Henry Besse, Delaware, O	2d best display of comb honey	5 00
Same	Best case white clover comb honey	3 00
J. C. Boynton, Delaware, O	2d best case white clover comb honey	2 00
Same	Best case bass-wood comb honey	3 00
Henry Besse, Delaware, O	2d best case bass-wood comb honey	2 00
Same	Best case comb honey from fall flowers	3 00
J. C. Boynton, Delaware, O	2d best case comb honey from fall flowers	2 00
Jessie Goodrich, Worthington, O	Best 12 pounds extracted honey	3 00
Mrs. J. C. Williamson, Hilliards, O	2d best 12 pounds extracted honey	2 00
Jessie Goodrich, Worthington, O	Best display extracted honey	10 00
Egbert R. Magoon, New England, O	2d best display extracted honey	5 00
Jessie Goodrich, Worthington, O	Best display of candied honey	5 00
J. C. Boynton, Delaware, O	2d best display of candied honey	3 00
Jessie Goodrich, Worthington, O	Best display of beeswax	2 00
J. C. Boynton, Delaware, O	2d best display of beeswax	1 00
Egbert R. Magoon, New England, O	Best Nucleus Italian bees in observatory hive	3 00
W. T. Easton, Watkins, O	2d b't Nucleus Italian bees in observatory hive	2 00
Same	B't Nucleus Carniolan bees in observat'y hive	3 00
Same	2d b't Nucleus Carniolan bees in observ'y hive	2 00
J. C. Boynton, Delaware, O	Best display comb foundation	2 00
Egbert R. Magoon, New England, O	2d best display comb foundation	1 00
J. C. Boynton, Delaware, O	Best display of honey in comb and extracted	15 00
Henry Besse, Delaware, O	2d b't display of honey in comb and extracted	8 00
Maple products.		
Mrs. E. G. Taggart, Lewis Center, O	Best gallon of maple syrup	3 00

HORTICULTURAL PRODUCTS.

S. H. Ellis, Member in Charge.

Owner's Name and Postoffice.	Name of Article.	Amount.
Summer and fall apples.		
Jas. E. Carpenter, Republic, O.	Best 6 varieties for family use	$4 00
Henry Bieber, Delaware, O.	2d best 6 varieties for family use	2 00
O. C. Stockman, Prospect, O.	Best 3 varieties for family use	3 00
J. C. Bear,, Dayton, O.	2d best 3 varieties for family use	1 50
E. G. Stockman, Prospect, O.	Best 3 varieties, large	3 00
Henry Bieber, Delaware, O.	2d best 3 varieties, large	1 50
E. G. Stockman, Prospect, G.	Best 3 varieties for market	3 00
J. C. Vergon, Delaware, O.	2d best 3 varieties for market	1 50
G. N. Toops, Chillicothe, O.	Best approved new variety	3 00
O. C. Stockman, Prospect, O.	Best variety summer dessert	2 00
J. C. Vergon, Delaware, O.	2d best variety summer dessert	1 00
Henry Bieber, Delaware, O.	Best variety fall dessert	2 00
O. C. Stockman, Prospect, O.	2d best variety fall dessert	1 00
E. G. Stockman, Prospect, O.	Best display of 10 varieties	6 00
Henry Bieber. Delaware, O.	2d best display of 10 varieties	3 00
Winter apples.		
J. C. Vergon, Delaware, O.	Best 12 varieties for family use	8 00
E. G. Stockman, Prospect, O.	2d best 12 varieties for family use.	4 00
J. C. Vergon Delaware. O.	Best 6 varieties for family use	4 00
T. S. Johnson, Gypsum, O.	2d best 6 varieties for family use	2 00
Same	Best 6 plates, large	4 00
J C. Vergon, Delaware, O.	Best variety dessert	2 00
Henry Bieber, Delaware, O	2d best variety dessert	1 00
J. C. Vergon, Delaware, O.	Best 6 varieties for market	4 00
Jas. E. Carpenter, Republic, O.	2d best 6 varieties for market	2 00
E. G. Stockman, Prospect, O.	Best display of 25 varieties.	10 00
Henry Bieber, Delaware, O	2d best display of 25 varieties	5 00
Plate apples, summer and fall.		
H. Bieber. Delaware, O.	Best plate Alexander	1 50
E. G. Stockman, Prospect, O.	2d best plate Alexander	75
C. W. Counter, Toledo, O.	Best American Summer Pearmain	1 50
E. G. Stockman, Prospect, O.	Best Benoni	1 50
C. W. Counter, Toledo, O.	2d best Benoni	75
E. G. Stockman, Prospect, O.	Best Beauty of Kent	1 50
H. Bieber, Delaware, O	2d best Beauty of Kent	75
E. G. Stockman, Prospect, O.	Best Cayuga Red Streak	1 50
C. W. Counter, Toledo. O	2d best Cayuga Red Streak	75
J. C. Vergon, Delaware, O.	Best Chenango Strawberry	1 50
H. Bieber, Delaware, O.	2d best Chenango Strawberry	75
E. G. Stockman, Prospect, O.	Best Duchess of Oldenburg	1 50
O. C. Stockman, Prospect, O.	2d best Duchess of Oldenburg	75
T. S. Johnson, Gypsum, O.	Best Fall Pippin	1 50
E. G. Stockman, Prospect, O	2d best Fall Pippin	75
J. C. Bear, Dayton, O	Best Gravenstein.	1 50
H. Bieber, Delaware, O	2d best Gravenstein	75
S. J. and S. R. Moore, Zanesville, O.	Best Jefferis	1 50
Jas. C. Carpenter, Republic, O.	Best Lowell	1 50
E. G. Stockman, Prospect, O.	2d best Lowell	75
J. C. Bear, Dayton, O	Best Maiden's Blush	1 50
E. G. Stockman, Prospect, O.	2d best Maiden's Blush	75
J. C. Bear. Dayton, O.	Best Ohio Nonpareil	1 50
S. J. and S. R. Moore, Zanesville, O.	Best Porter	1 50
Jas. E. Carpenter, Republic, O.	2d best Porter	75
C. W. Counter, Toledo. O	Best Red Astrachan	1 50
E. M. Woodward, Kirtland, O.	2d best Red Astrachan	75
Cobb Gavitt, Ashley, O.	Best Red Beitigheimer.	1 50
E. G. Stockman, Prospect, O.	2d best Red Beitigheimer	75
C. W. Counter, Toledo, O.	Best Sweet Bough	1 50
E. G. Stockman, Prospect, O.	Best Sweet Russet	1 50
O. C. Stockman, Prospect. O.	2d best Sweet Russet	75
Henry Bieber, Delaware, O.	Best St. Lawrence	1 50
E. G. Stockman, Prospect, O.	2d best St. Lawrence	75
C. W. Counter, Toledo, O.	Best Twenty Ounce	1 50
E. G. Stockman, Prospect, O.	2d best Twenty Ounce	75
M. I. Shively, Frankfort, O.	Best Wealthy	1 50
E. G. Cox, Bradrick, O.	2d best Wealthy	75
O. C. Stockman, Prospect, O.	Best Western Beauty	1 50
E. G. Stockman. Prospect, O.	2d best Western Beauty	75
Jas. E. Carpenter, Republic, O.	Best Yellow Transparent.	1 50
E. G. Stockman, Prospect, O.	2d best Yellow Transparent	75

HORTICULTURAL PRODUCTS—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
Plate apples, winter.		
S. J. and S. R. Moore, Zanesville, O.	Best American Golden Russet	$1 50
C. W. Counter, Toledo, O.	2d best American Golden Russet	75
T. S. Johnson, Gypsum, O.	Best Baldwin	1 50
Henry Bieber, Delaware, O.	2d best Baldwin	75
T. S. Johnson, Gypsum, O.	Best Baltimore.	1 50
C. W. Counter, Toledo, O.	2d best Baltimore	75
Henry Bieber, Delaware, O	Best Bailey's Sweet	1 50
E. G. Stockman. Prospect, O.	2d best Bailey's Sweet	75
T. S. Johnson, Gypsum, O.	Best Belleflower Yellow	1 50
Fred Clamfurth, Lithopolis, O	2d best Belleflower Yellow	75
Henry Bieber, Delaware. O.	Best Belmont	1 50
C. W. Counter Toledo, O	2d best Belmont	75
E. G. Cox, Bradrick. O	Best Ben Davis	1 50
J. C. Vergon, Delaware. O.	2d best Ben Davis	75
C. W. Counter, Toledo, O.	Best Black Gilliflower	1 50
E. G Stockman, Prospect O.	2d best Black Gilliflower	75
Same	2d best Blue Pearmain	75
T. S. Johnson, Gypsum, O.	Best Dominie	1 50
C. W. Counter, Toledo, O	2d best Dominie	75
E. G. Stockman. Prospect, O.	Best Fallawater	1 50
J. C. Vergon, Delaware, O	2d best Fallawater	75
M. A. Sallee, Lithopolis, O	Best Famuse	1 50
E. G. Stockman, Prospect, O.	2d best Famuse	75
M. I. Shively, Frankfort, O.	Best Grimes Golden	1 50
U. T. Cox, Bradrick, O.	2d best Grimes Golden	75
T. S. Johnson, Gypsum, O.	Best Hubbardson	1 50
S. J. and S. R. Moore, Zanesville, O.	2d best Hubbardson	75
J. C. Vergon, Delaware, O	Best Jonathan	1 50
C. W. Counter, Toledo, O.	2d best Jonathan	75
E. G. Stockman, Prospect, O.	Best King (Tompkins Co.)	1 50
O. C. Stockman, Prospect, O.	2d best King (Tompkins Co.)	75
M. I. Shively, Frankfort, O.	Best Limber Twig	1 50
J. C. Vergon, Delaware, O.	Best Minkler	1 50
E. G. Stockman, Prospect, O.	2d best Minkler	75
M. A. Sallee, Lithopolis, O	Best Northern Spy	1 50
E. G. Cox, Bradrick O.	2d best Northern Spy	75
J. C. Vergon, Delaware, O.	Best Pennock	1 50
C. W. Counter, Toledo, O.	2d best Pennock	75
O. C. Stockman, Prospect, O.	Best Pound Sweet	1 50
E. G. Stockman, Prospect O.	2d best Pound Sweet	75
J. C. Vergon, Delaware. O.	Best Peck's Pleasant	1 50
E. G. Stockman. Prospect, O.	2d best Peck's Pleasant	75
Same	Best Pewaukee	1 50
O. C. Stockman, Prospect, O.	2d best Pewaukee	75
E. G. Stockman, Prospect, O.	Best Rambo	1 50
C. W. Counter, Toledo, O.	2d best Rambo.	75
E. G. Stockman, Prospect, O.	Best Rawles' Janet	1 50
T. S. Johnson, Gypsum, O.	2d best Rawles' Janet	75
Henry Bieber, Delaware O.	Best Red Canada	1 50
T. S. Johnson, Gypsum, O.	2d best Red Canada	75
Same	Best Rhode Island Greening	1 50
J. C. Vergon, Delaware, O.	2d best Rhode Island Greening	75
E. G. Cox Bradrick, O	Best Rome Beauty	1 50
U. T. Cox, Bradrick O	2d best Rome Beauty	75
T. S. Johnson, Gypsum, O	Best Roxbury Russet.	1 50
G. N. Toops, Chillicothe, O.	2d best Roxbury Russet	75
M. I. Shively Frankfort, O	Best Smith's Cider	1 50
E. G. Stockman, Prospect, O	2d best Smith's Cider	75
Same	Best Smoke House	1 50
E. G. Cox, Bradrick, O.	Best Stark	1 50
J. C. Vergon, Delaware, O.	2d best Stark	75
E. G. Stockman, Prospect, O.	Best Spitzenberg Kaighn	1 50
Same	Best Seek-no farther	1 50
O. C. Stockman Prospect O.	2d best Seek-no-farther	75
Henry Bieber, Delaware O.	Best Talman Sweet	1 50
E. G. Stockman Prospect, O.	2e best Talman Sweet	75
U. T. Cox, Bradrick, O.	Best Wagner	1 50
T. S. Johnson, Gypsum, O.	2d best Wagner	75
E. G. Stockman, Prospect, O.	Best Walbridge	1 50
O. C. Stockman, Prospect, O	Best White Pippin	1 50
E. G. Stockman, Prospect, O.	2d best White Pippin	75
O. C. Stockman, Prospect, O.	Best Willow Twig	1 50
E. G. Stockman, Prospect, O.	2d best Willow Twig	75
Same	Best Wine Sap	1 50
S. J. and S. R. Moore, Zanesville, O.	2d best Wine Sap	75
U. T. Cox, Bradrick, O.	Best York Imperial	1 50
E. G. Stockman, Prospect, O.	2d best York Imperial	75

HORTICULTURAL PRODUCTS—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
Crab Apples.		
S. J. and S. R. Moore, Zanesville, O	Best Hughes' Virginia	$1 50
E. V. Rhoads, Mgr., St. Paris, O	2d best Hughes' Virginia	75
M. I. Shively, Frankfort, O	Best Hyslop	1 50
G. N. Toops, Chillicothe, O	2d best Hyslop	75
E. G. Stockman, Prospect, O	Best Transcendent	1 50
S. J. and S. R. Moore, Zanesville, O	2d best Transcendent	75
E. G. Stockman, Prospect, O	Best Whitney's No 20	1 50
Henry Bieber, Delaware, O	2d best Whitney's No. 20	75
Peaches.		
W. H. West, Chillicothe, O	Best 6 varieties green or white fleshed	3 00
W. W. Farnsworth, Waterville, O	2d best 6 varieties green or white fleshed	2 00
C. W. Counter Toledo, O	Best 6 varieties, yellow	3 00
T. S. Johnson, Gypsum, O	Best new seedling	2 00
G. N. Toops, Chillicothe, O	2d best new seedling	1 00
W. W. Farnsworth, Waterville, O	Best display of 10 varieties	6 00
T. S. Johnson, Gypsum, O	2d best display of 10 varieties	4 00
Same	Best Beer's Smock	2 00
W. H. West, Chillicothe, O	2d best Beer's Smock	1 00
C. R. Elsea, Lithopolis, O	Best Clair's Choice	2 00
W. W. Farnsworth, Waterville, O	2d best Clair's Choice	1 00
Same	Best Champion	2 00
C. W. Counter, Toledo, O	2d best Champion	1 00
G. N. Toops, Chillicothe, O	Best Crawford's Early	2 00
W. W. Farnsworth, Waterville, O	2d best Crawford's Early	1 00
D. F. Corwin, Springboro, O	Best Crawford's Late	2 00
C. R. Elsea, Lithopolis, O	2d best Crawford's Late	1 00
Theo. Neff, Bellaire, O	Best Crosby	2 00
C. W. Counter, Toledo, O	2d best Crosby	1 00
M. I. Shively, Frankfort, O	Best Diamond	2 00
G. N. Toops, Chillicothe, O	2d best Diamond	1 00
W. W. Farnsworth, Waterville O	Best Early Rivers	2 00
C. W. Counter, Toledo, O	2d best Early Rivers	1 00
M. I. Shively, Frankfort, O	Best Elberta	2 00
Theodore Neff, Bellaire, O	2d best Elberta	1 00
W. W. Farnsworth, Waterville, O	Best Early Toledo	2 00
C. W. Counter, Toledo, O	2d best Early Toledo	1 00
W. W. Farnsworth, Waterville, O	Best Early York	2 00
C. W. Counter, Toledo, O	Best Foster	2 00
C. R. Elsea, Lithopolis, O	2d best Foster	1 00
W. W. Farnsworth Waterville, O	Best Hills' Chili	2 00
C. W. Counter, Toledo, O	2d best Hills' Chili	1 00
G. N. Toops, Chillicothe, O	Best Jacques' Rareripe	2 00
C. W. Counter, Toledo, O	2d best Jacques' Rareripe	1 00
G. N. Toops, Chillicothe, O	Best Lemon Cling	2 00
C. R. Elsea, Lithopolis, O	2d best Lemon Cling	1 00
W. W. Farnsworth, Waterville, O	Best Lewis' Seedling	2 00
C. W. Counter, Toledo O	2d best Lewis' Seedling	1 00
Same	Best Mountain Rose	2 00
W. W. Farnsworth, Waterville, O	2d best Mountain Rose	1 00
G. N. Toops, Chillicothe, O	Best Moore's White	2 00
M. I. Shively, Frankfort, O	2d best Moore's White	1 00
W. W. Farnsworth, Waterville, O	Best Marshall's Late	2 00
C. W. Counter Toledo O	2d best Marshall's Late	1 00
W. H. West, Chillicothe, O	Best Old Mixon, cling	2 00
G. N. Toops, Chillicothe, O	2d best Old Mixon, cling	1 00
W. W. Farnsworth, Waterville, O	Best Old Mixon, free	2 00
G. N. Toops, Chillicothe, O	2d best Old Mixon, free	1 00
C. W. Counter, Toledo, O	Best President	2 00
W. W. Farnsworth, Waterville, O	2d best President	1 00
W. W. Farnsworth, Waterville, O	Best Red Cheeked Melocoton	2 00
D. F. Corwin, Springboro, O	2d best Red Cheeked Melocoton	1 00
T. S. Johnson, Gypsum, O	Best Salway	2 00
G. N. Toops, Chillicothe, O.	2d best Salway	1 00
C. W. Counter, Toledo, O	Best Smock, free	2 00
G. N. Toops, Chillicothe, O	2d best Smock, free	1 00
W. H. West, Chillicothe, O	Best Stump-the-World	2 00
T. S. Johnson, Gypsum, O	2d best Stump-the-World	1 00
C. W. Counter, Toledo, O	Best Stephens' Rareripe	2 00
W. W. Farnsworth, Waterville, O	2d best Stephens' Rareripe	1 00
G. N. Toops, Chillicothe, O	Best Ward's Late	2 00
C. W. Counter, Toledo, O	Best Wheeler's Late	2 00
W. W. Farnsworth, Waterville, O	Best Wheatland	2 00
C. W. Counter, Toledo, O	2d best Wheatland	1 00

HORTICULTURAL PRODUCTS—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
Quinces.		
E. G. Cox, Bradrick, O.	Best Champion	$2 00
C. R. Elsea, Lithopolis, O.	2d best Champion	1 00
G. N. Toops, Chillicothe, O.	Best Meech	2 00
E. G. Cox, Bradrick, O.	2d best Meech	1 00
Same	Best Rea's Mammoth	2 00
G. N. Toops Chillicothe, O.	2d best Rea's Mammoth	1 00
E. G. Cox, Bradrick, O.	Best Orange	2 00
G. N. Toops, Chillicothe, O.	2d best Orange	1 00
Same	Best peck of quinces	3 00
C. R. Elsea, Lithopolis, O.	2d best peck of quinces	1 50
Plums.		
T. S. Johnson, Gypsum, O.	Best Abundance	2 00
W. W. Farnsworth, Waterville	2d best Abundance	1 00
Same	Best Bradshaw	2 00
C. W. Counter, Toledo, O.	2d best Bradshaw	1 00
T. S. Johnson, Gypsum, O.	Best Burbank	2 00
W. W. Farnsworth, Waterville, O.	2d best Burbank	1 00
T. S. Johnson, Gypsum, O	Best Coe's Golden Drop	2 00
C. W. Counter, Toledo, O.	Best Duane's Purple	2 00
W. W. Farnsworth, Waterville, O.	2d best Duane's Purple	1 00
Same	Best Fellenberg	2 00
C. W. Counter, Toledo, O.	2d best Fellenberg	1 00
T. S. Johnson, Gypsum, O.	Best Genie	2 00
W. W. Farnsworth, Waterville, O	2d best Genie	1 00
Same	Best German Prune	2 00
T. S. Johnson, Gypsum, O	2d best German Prune	1 00
C. W. Counter, Toledo, O	Best Garfield	2 00
W. W. Farnsworth, Waterville, O.	2d best Garfield	1 00
Same	Best Imperial Gage	2 00
C. W. Counter, Toledo, O.	2d best Imperial Gage	1 00
T. S. Johnson, Gypsum, O	Best Lombard	2 00
W. W. Farnsworth, Waterville, O.	2d best Lombard	1 00
T. S. Johnson, Gypsum, O.	Best Murdy	2 00
W. W. Farnsworth, Waterville, O.	2d best Murdy	1 00
Same	Best Moore's Arctic	2 00
C. W. Counter, Toledo, O.	2d best Moore's Arctic.	1 00
Same	Best Niagara	2 00
W. W. Farnsworth, Waterville, O	2d best Niagara	1 00
T. S. Johnson Gypsum, O.	Best Pond's Seedling	2 00
W. W. Farnsworth, Waterville, O.	2d best Pond's Seedling	1 00
Same	Best Reine Claude	2 00
Jas. E. Carpenter, Republic, O	2d best Reine Claude	1 00
J. C. Bear, Dayton, O	Best Richland	2 00
W. H. West, Chillicothe, O.	Best Shropshire	2 00
E. M. Woodward, Kirtland, O.	2d best Shropshire	1 00
W. W. Farnsworth, Waterville, O.	Best Shipper's Pride	2 00
C. W. Counter, Toledo, O	2d best Shipper's Pride	1 00
W. W. Farnsworth, Waterville, O	Best display of 10 varieties	5 00
T. S. Johnson, Gypsum, O.	2d best display of 10 varieties	2 50
Same	Best display of 5 varieties	3 00
W. W. Farnsworth, Waterville, O.	2d best display of 5 varieties	1 50
Pears.		
C. W. Counter, Toledo, O.	Best 6 varieties of summer and fall	4 00
W. W. Farnsworth, Waterville, O.	2d best 6 varieties of summer and fall	2 00
Same	Best 10 varieties, summer, fall and winter	5 00
C. W. Counter, Toledo, O.	2d best 10 varieties, summer fall and winter	2 50
W. W. Farnsworth, Waterville, O.	Best 3 varieties, large	3 00
T. S. Johnson, Gypsum, O.	2d best 3 varieties, large	1 50
E. G. Cox, Bradrick, O	Best variety of dessert	2 00
E. V. Rhoads, Mgr., St. Paris, O.	2d best variety of dessert	1 00
C. W. Counter, Toledo, O.	Best display of 20 varieties	10 00
W. W. Farnsworth, Waterville, O.	2d best display of 20 varieties	5 00
C. W. Counter, Toledo, O.	Best Anjou	2 00
E. V. Rhoads, Mgr., St. Paris, O.	2d best Anjou	1 00
T. S. Johnson, Gypsum, O.	Best Bartlett	2 00
C. W. Counter, Toledo, O.	2d best Bartlett	1 00
L. C. Rice, Springboro, O.	Best Beurre Bosc	2 00
D. F. Corwin, Springboro, O.	2d best Beurre Bosc	1 00
W. W. Farnsworth, Waterville, O.	Best Beurre Clairgeau	2 00

HORTICULTURAL PRODUCTS—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
Pears—Concluded.		
C. W. Counter, Toledo, O.	2d best Beurre Clairgeau	$1 00
E. M. Woodward, Kirtland, O.	Best Clapp's Favorite	2 00
T. S. Johnson, Gypsum, O.	2d best Clapp's Favorite	1 00
W. W. Farnsworth, Waterville, O.	Best Columbia	2 00
C. W. Counter, Toledo, O.	2d best Columbia	1 00
Same	Best Doyenne Bousoc	2 00
T. S. Johnson, Gypsum, O.	2d best Doyenne Bousoc	1 00
Jas. E. Carpenter, Republic, O.	Best Duchess	2 00
T. S. Johnson, Gypsum, O.	2d best Duchess	1 00
C. W. Counter, Toledo, O.	Best Flemish Beauty	2 00
E. M. Woodward, Kirtland, O.	2d best Flemish Beauty	1 00
W. W. Farnsworth, Waterville, O.	Best Howell	2 00
C. R. Elsea, Lithopolis, O.	2d best Howell	1 00
C. W. Counter, Toledo, O.	Best Idaho	2 00
W. W. Farnsworth, Waterville, O.	2d best Idaho	1 00
C. W. Counter, Toledo, O.	Best Josephine	2 00
W. W. Farnsworth, Waterville, O.	2d best Josephine	1 00
C. W. Counter, Toledo, O.	Best Kirtland	2 00
W. W. Farnsworth, Waterville, O.	2d best Kirtland	1 00
M. I. Shively, Frankfort, O.	Best Keiffer	2 00
J. C. Bear, Dayton, O.	2d best Keiffer	1 00
W. W. Farnsworth, Waterville, O.	Best Lawrence	2 00
C. W. Counter, Toledo, O.	2d best Lawrence	1 00
Same	Best Le Conte	2 00
L. C. Rice, Springboro, O.	2d best Le Conte	1 00
T. S. Johnson, Gypsum, O.	Best Louise Bonne	2 00
C. W. Counter, Toledo, O.	2d best Louise Bonne	1 00
W. W. Farnsworth, Waterville, O.	Best Onondaga	2 00
C. W. Counter, Toledo, O.	2d best Onondaga	1 00
W. W. Farnsworth, Waterville, O.	Best President	2 00
C. W. Counter, Toledo, O.	2d best President	1 00
E. G. Cox, Bradrick, O.	Best Seckel	2 00
U. T. Cox, Bradrick, O.	2d best Seckel	1 00
C. W. Counter, Toledo, O.	Best Sheldon	2 00
W. W. Farnsworth, Waterville, O.	2d best Sheldon	1 00
T. S. Johnson, Gypsum, O.	Best Vicar	2 00
Theodore Neff, Bellaire, O.	2d best Vicar	1 00
Jas. E. Carpenter, Republic, O.	Best Winter Nelis	2 00
E. V. Rhoades, Mgr., St. Paris, O.	2d best Winter Nelis	1 00
Grapes—Hardy.		
E. M. Woodward, Kirtland, O.	Best 20 varieties	10 00
C. W. Counter, Toledo, O.	2d best 20 varieties	6 00
E. M. Woodward, Kirtland, O.	Best 10 varieties	5 00
C. W. Counter, Toledo, O.	2d best 10 varieties	3 00
Wm. H. West, Chillicothe, O.	Best 6 varieties	4 00
E. M. Woodward, Kirtland, O.	2d best 6 varieties	2 00
Wm. H. West, Chillicothe, O.	Best 3 varieties	3 00
E. M. Woodward, Kirtland, O.	2d best 3 varieties	1 50
Same	Best 3 plates early table	3 00
Wm. H. West, Chillicothe, O.	2d best 3 plates early table	1 50
E. M. Woodward, Kirtland, O.	Best 3 plates late table	3 00
C. W. Counter, Toledo, O.	2d best 3 plates late table	1 50
E. M. Woodward, Kirtland, O.	Best Agawam	2 00
Wm. H. West, Chillicothe, O.	2d best Agawam	1 00
E. M. Woodward, Kirtland, O.	Best Bacchus	2 00
Wm. H. West, Chillicothe, O.	2d best Bacchus	1 00
Same	Best Brighton	2 00
C. W. Counter, Toledo, O.	2d best Brighton	1 00
E. M. Woodward, Kirtland, O.	Best Brilliant	2 00
Same	Best Catawba	2 00
Wm. H. West, Chillicothe, O.	2d best Catawba	1 00
Same	Best Concord	2 00
E. M. Woodward, Kirtland, O.	2d best Concord	1 00
T. S. Johnson, Gypsum, O.	Best Delaware	2 00
E. M. Woodward, Kirtland, O.	2d best Delaware	1 00
Same	Best Diana	2 00
Wm. H. West, Chillicothe, O.	2d best Diana	1 00
E. M. Woodward, Kirtland, O.	Best Duchess	2 00
T. S. Johnson, Gypsum, O.	2d best Duchess	1 00
E. M. Woodward, Kirtland, O.	Best Eaton	2 00
Same	Best Elvira	2 00
Wm. H. West, Chillicothe, O.	2d best Elvira	1 00
Same	Best Empire State	2 00

Horticultural Products—Concluded.

Owner's Name and Postoffice.	Name of Article.	Amount.
Grapes—Hardy—Concluded.		
E. M. Woodward, Kirtland, O.	2d best Empire State	$1 00
Same	Best Early Ohio	2 00
Same	Best Green Mountain	2 00
T S. Johnson, Gypsum, O.	Best R. B. Hayes	2 00
J. C. Bear, Dayton, O	2d best R. B. Hayes	1 00
E. M. Woodward, Kirtland, O	Best Ives	2 00
J. C. Bear, Dayton, O	2d best Ives	1 00
E. M. Woodward, Kirtland, O.	Best Isabella	2 00
Wm. H. West, Chillicothe, O	2d best Isabella	1 00
E. M. Woodward, Kirtland, O.	Best Iona	2 00
T. S. Johnson, Gypsum, O.	2d best Iona	1 00
E. M. Woodward, Kirtland, O	Best Jefferson	2 00
T. S. Johnson, Gypsum, O.	2d best Jefferson	1 00
E. M Woodward, Kirtland, O.	Best Lady	2 00
T. S. Johnson, Gypsum, O.	2d best Lady	1 00
E. M. Woodward, Kirtland, O.	Best Lady Washington	2 00
Wm. H. West, Chillicothe, O.	2d best Lady Washington	1 00
E. M. Woodward, Kirtland, O.	Best Lindley	2 00
C W. Counter, Toledo, O	2d best Lindley	1 00
E. M Woodward, Kirtland, O.	Best Martha	2 00
T. S. Johnson, Gypsum, O	2d best Martha	1 00
C. R. Elsea, Lithopolis, O	Best Massasoit	2 00
E. M. Woodward, Kirtland, O.	Best Moore's Diamond	2 00
C. W. Counter, Toledo, O	2d best Moore's Diamond	1 00
Same	Best Moore's Early	2 00
E. M. Woodward, Kirtland, O	2d best Moore's Early	1 00
Same	Best Moyer	2 00
Same	Best Nectar	2 00
Same	Best Norton's Virginia	2 00
Wm. H. West, Chillicothe, O.	2d best Norton's Virginia	1 00
E. M. Woodward, Kirtland, O.	Best Niagara	2 00
T. S. Johnson, Gypsum, O.	2d best Niagara	1 00
E. M. Woodward, Kirtland, O.	Best Pocklington	2 00
Wm. H. West, Chillicothe, O.	2d best Pocklington	1 00
E. M. Woodward, Kirtland, O.	Best Poughkeepsie	2 00
Same	Best Salem	2 00
C. W. Counter, Toledo, O	2d best Salem	1 00
E. M. Woodward, Kirtland, O.	Best Vergennes	2 00
T. S. Johnson, Gypsum, O	2d best Vergennes	1 00
E. M. Woodward, Kirtland, O.	Best Wilder	2 00
T. S. Johnson, Gypsum, O.	2d best Wilder	1 00
E. M. Woodward, Kirtland, O	Best Woodruff's Red	2 00
Wm. H. West, Chillicothe, O.	2d best Woodruff's Red	1 00
C. W. Counter, Toledo, O	Best Worden	2 00
E. M Woodward, Kirtland, O.	2d best Worden	1 00
County fruits.		
T. S. Johnson, Gypsum, O.	Best county exhibit—OTTAWA	75 00
W. W. Farnsworth Waterville, O.	2d best county exhibit—LUCAS	50 00
E. M. Woodward, Kirtland, O.	3d best county exhibit—LAKE	40 00
E. G. Stockman, Prospect, O	4th best county exhibit—MARION	25 00
J. C. Vergon, Delaware, O.	5th best county exhibit—DELAWARE	20 00

PLANTS AND FLOWERS.

S. H. Ellis, Member in Charge.

Owner's Name and Postoffice.	Name of Article.	Amount.
Plants—Professional List.		
E. L. Charles. Columbus, O	Best collection of plants	$20 00
Geo. F. Brehmer, Chillicothe O	2d best collection of plants	10 00
E. L. Charles, Columbus, O.	Best collection of palms	15 00
George F. Brehmer, Chillicothe, O	2d best collection of palms	8 00
E. L. Charles, Columbus, O	Best collection of ferns and lycopodiums	10 00
Geo. F. Brehmer, Chillicothe, O	2d best collection of ferns and lycopodiums	5 00
Same	Best collection of variegated plants	10 00
E. L. Charles, Columbus, O	2d best collection of variegated plants	5 00
Same	Best collection of begonias	8 00
T. C. Breece, West Berlin, O	Best collection of cannas	10 00
E. L. Charles, Columbus, O	2d best collection of cannas	5 00
Geo. F. Brehmer, Chillicothe, O	Best collection of dracaenas	5 00
E. L. Charles, Columbus, O	2d best collection of dracaenas	3 00
Geo. F. Brehmer. Chillicothe, O	Best collection of crotons	10 00
E. L. Charles, Columbus, O	2d best collection of crotons	5 00
Same	Best collection of plants on trellis	5 00
Geo. F. Brehmer, Chillicothe, O	Best collection of aloes and cacti	5 00
E. L. Charles, Columbus, O	2d best collection of aloes and cacti	3 00
Same	Best collection of calladiums	5 00
Geo. F. Brehmer. Chillicothe, O	2d best collection of calladiums	3 00
E. L. Charles, Columbus, O.	Best collection of carnations	5 00
T. C. Breece, West Berlin, O	Best collection of geraniums	5 00
E. L. Charles. Columbus, O	2d best collection of geraniums	3 00
Same	Best collection of asters	3 00
Same	Best pair of vases of living plants	5 00
Same	Best 6 hanging baskets	5 00
Cut Flowers—Florist's List.		
E. L. Charles, Columbus, O	Best pair of hand bouquets	5 00
Same	Best arranged basket	5 00
Same	Best display of floral designs	20 00
Same	Best single floral design	8 00
Geo. F. Brehmer, Chillicothe, O	Best display of cut roses	8 00
E. L. Charles, Columbus, O	2d best display of cut roses	3 00
The Cushman Gladiolus Co., Euclid, O	Best display of cut dahlias	5 00
E. L. Charles. Columbus, O	2d best display of cut dahlias	2 00
The Cushman Gladiolus Co., Euclid, O	Best display of gladioli	6 00
E. L. Charles, Columbus, O	2d best display of cut gladioli	3 00
Same	Best display of cut verbenas	3 00
Geo. F. Brehmer, Chillicothe, O	2d best display of cut verbenas	2 00
E. L. Charles, Columbus, O	Best display of cut phloxes	3 00
Geo. F. Brehmer, Chillicothe, O	2d best display of cut phloxes	2 00
E. L. Charles, Columbus. O	Best display of cut carnations	5 00
Geo. F. Brehmer, Chillicothe, O	2d best display of cut carnations	3 00
Same	Best display of cut asters	5 00
E. L. Charles. Columbus. O	2d best display of cut asters	3 00
The Cushman Gladiolus Co., Euclid, O	Best display of cut gladioli in vases	5 00
E. L Charles. Columbus, O	Best and largest collection of flowers	8 00
Geo. F. Brehmer, Chillicothe, O	2d best and largest collection of flowers	4 00
Plants—Amateur List.		
Minnie E. Bieber, Delaware, O	Best collection of store & greenhouse plants	15 00
Mrs. W. R. Sprague, Brice, O	2d best collect'n of store & greenhouse plants	8 00
Minnie E. Bieber, Delaware, O.	Best collection of variegated plants	8 00
Susie E. Perry, Columbus, O	2d best collection of variegated plants	4 00
Same	Best collection of begonias	8 00
Mrs. W R. Sprague, Brice, O	2d best collection of begonias	4 00
Susie E. Perry. Columbus, O	Best collection of cannas	5 00
Ellis N. Craig, Zimmer, O	2d best collection of cannas	3 00
Mrs. Ella Zimmer, Zimmer, O	Best collection of aloes and cacti	5 00
Mrs. W. R. Sprague, Brice, O	Best collection of geraniums	5 00
Mrs. N. D. Perry. Columbus, O	2d best collection of geraniums	3 00
Minnie E. Bieber, Delaware, O	Best collection of ferns and lycopodeums	5 00
Mrs. Ella Zimmer, Zimmer, O	Best collection of plants on trellis	3 00
Mrs. W. R. Sprague Brice, O	2d best collection of plants on trellis	2 00
Same	Best 6 hanging baskets	5 00
Lon W. Taggart, Lewis Center	Best single rustic basket	3 00

PLANTS AND FLOWERS—Concluded.

Owner's Name and Postoffice.	Name of Article.	Amount.
Cut Flowers—Amateur List.		
Mrs. Sarah B. Franklin, Chillicothe, O	Best collection of dahlias	$3 00
Ellis N. Craig, Zimmer, O	2d best collection of dahlias	2 00
Mrs. E. G. Taggart, Lewis Center, O	Best collection of verbenas	3 00
Minnie E. Bieber, Delaware, O	2d best collection of verbenas	2 00
Same	Best collection of phloxes	2 00
Mrs. E. G. Taggart, Lewis Center, O	2d best collection of phloxes	1 00
Mrs. Sarah B. Franklin, Chillicothe, O	Best display of asters	3 00
Lon W. Taggart, Lewis Center, O	2d best display of asters	2 00
Minnie F. Bieber, Delaware, O	Best display of balsams	2 00
Mrs. W. R. Sprague, Brice, O.	2d best display of balsams	1 00
Minnie E. Bieber, Delaware, O	Best display of geraniums	2 00
Susie E. Perry, Columbus, O	2d best display of geraniums	1 00
Mrs. E. C. Taggart, Lewis Center, O	Best display of petunias	2 00
Minnie E. Bieber, Delaware, O	2d best display of petunias	1 00
Mrs. Sarah B. Franklin, Chillicothe. O	Best display of carnations	3 00
Mrs. E. G. Taggart, Lewis Center. O	Best display of gladioli	2 00
Mrs. W. R. Sprague, Brice, O.	Best display of coxcombs and amaranths	2 00
Ellis N. Craig, Zimmer, O	Best display of double zinnias	2 00
Mrs. Sarah B. Franklin, Chillicothe, O	2d best display of double zinnias	1 00
Ellis N. Craig, Zimmer, O	Best display cut flowers in variety and quality	5 00
Mrs. A. D. Perry, Columbus, O	2d best display cut flowers in var. and quality	3 00
Susie E. Perry, Columbus, O.	Best pair of bouquets	3 00
Jas. E. Taggart, Lewis Center, O.	2d best pair of bouquets	2 00
Mrs. A D. Perry. Columbus, O	Best vase of cut flowers	3 00
Ellis N. Craig. Zimmer, O	2d best vase of cut flowers	2 00
Susie E. Perry, Columbus, O	Best single floral design	5 00
Lon W. Taggart, Lewis Center, O	Best collection of native flowers	3 00
Mrs. E. G. Taggart, Lewis Center, O	2d best collection of native flowers	2 00

WOMAN'S WORK—H. S. GRIMES—Member in Charge.

TEXTILE FABRICS AND DOMESTIC MANUFACTURES.

Owner's Name and Postoffice.	Name of Article.	Amount.
Household fabrics.		
Mrs. H. J. Ansing, Columbus, O.	Best silk quilt (crazy)	$3 00
Mrs. P. F. Callen, Columbus, O.	2d best silk quilt (crazy)	1 00
Mrs. J. A. Merry, Portsmouth, O.	Best silk quilt (not crazy)	3 00
Mrs. P. F. Callen, Columbus, O.	2 best silk quilt (not crazy)	1 00
Anna Miller, Quincy, Ill.	Best velvet quilt (large)	3 00
Mrs. Buck, Lockland, O.	2d best velvet quilt (large)	1 00
Mrs. P. Grooms, Brecon, O.	Best worsted quilt	2 00
Mrs. L. C. Covault, Casstown, O.	2d best worsted quilt	1 00
Mrs. H. L. Lanum, Columbus, O.	Best log cabin quilt	2 00
Mrs. P. Grooms, Brecon, O.	2d best log cabin quilt	1 00
Mrs. A. W. Graham, Reynoldsburg, O.	Best white quilt	2 00
Mrs. L. E. Rockwell, Quincy, Ill.	2d best white quilt	1 00
Alice Linson, South Charleston, O.	Best patchwork quilt	2 00
Mrs. Thos. Poole, Reynoldsburg, O.	2d best patchwork quilt	1 00
Mrs. L. E. Rockwell, Quincy, Ill.	Best cradle quilt	1 00
Mrs. P. Grooms, Brecon, O.	2d best cradle quilt	50
Anna Miller, Quincy, Ill.	Best silk comfort	3 00
Mrs. P. Grooms, Brecon, O.	2d best silk comfort	1 00
Mrs. M. Edmondson, Newark, O.	Best cotton comfort	2 00
Mrs. Lee Harris, Cincinnati, O.	2d best cotton comfort	1 00
O. C. Stockman, Prospect, O.	Best worsted comfort	2 00
Mary F. Maxwell, Reynoldsburg, O.	2d best worsted comfort	1 00
O. C. Stockman, Prospect, O.	Best hearth rug (rag)	1 00
Mrs. H. G. Young, Clintonville, O.	2d best hearth rug (rag)	50
Miss Mattie Hall, Lexington, Ky.	Best cotton lace	1 00
Mrs Rebecca Holmes, Marion, O.	2d best cotton lace	50
Mrs. L. C. Covault, Casstown, O.	Best woolen lace	1 00
Miss Mattie Hall, Lexington, Ky.	2d best woolen lace	50
Mrs. Rebecca Holmes, Marion, O.	Best infant's sacque	1 00
Mrs. Dr. Messenger, Xenia, O.	2d best infant's sacque	50
Mrs. Buck, Lockland, O.	Best infant's hood	1 00
Needle work—Handmade.		
Mrs. C. J. McClure, Xenia, O.	Best pair fancy sheets	2 00
Miss M. Edmondson, Newark, O.	2d best pair fancy sheets	1 00
Mrs. L. P. Wannan, Norwood, O.	Best pair fancy pillow shams	2 00
Jessie Hamilton, Columbus, O.	2d best pair fancy pillow shams	1 00
Mrs. P. Grooms, Brecon, O.	Best tucked chemise	2 00
Anna Miller, Quincy, Ill.	2d best tucked chemise	1 00
Same	Best tucked night dress	2 00
Mary F. Maxwell, Reynoldsburg, O.	2d best tucked night dress	1 00
Mrs. C. J. McClure, Xenia, O.	Best fancy pillow case	1 00
Mrs. L. P. Wannan, Norwood, O.	2d best fancy pillow case	50
Mrs. Robert Sproul, Troy, O.	Best fancy apron	1 00
Mrs. J. F. Cissna, Washington C. H., O.	2d best fancy apron	50
Anna Miller, Quincy, Ill.	Best infant's robe	2 00
Mrs. C. J. McClure, Xenia, O.	2d best infant's robe	1 00
Sarah Glick, Columbus, O.	Best bed spread	2 00
Mrs. P. T. Callen, Columbus, O	2d best bed spread	1 00
Mary F. Maxwell, Reynoldsburg, O.	Best gentleman's shirt	2 00
Mrs. Thos. Poole, Reynoldsburg, O.	2d best gentleman's shirt	1 00
Mrs. L. E. Rockwell, Quincy, Ill.	Best hearth rug (yarn)	1 00
Anna Miller, Quincy, Ill.	2d best hearth rug (yarn)	50
Mrs. L. E. Rockwell, Quincy, Ill.	Best rag carpet	3 00
Mary F. Maxwell, Reynoldsburg, O.	2d best rag carpet	2 00
Miss M. Edmondson, Newark, O.	Best specimen darning	1 00
Mrs. Buck, Lockland, O.	2d best specimen darning	50
Knitting.		
Mrs. P. Grooms, Brecon, O.	Best pair woolen stockings	1 00
Mrs. L. E. Rockwell, Quincy, Ill.	2d best pair woolen stockings	50
Mrs. P. Grooms, Brecon, O.	Best pair woolen socks	1 00
Mrs. L. E. Rockwell, Quincy, Ill.	2d best pair woolen socks	50
Mrs. P. Grooms, Brecon, O.	Best pair baby socks	1 00
Mrs. Dr. Messenger, Xenia, O.	2d best pair baby socks	50
Anna Miller, Quincy, Ill.	Best pair woolen mittens	1 00
Mrs. L. E. Rockwell, Quincy, Ill.	2d best pair woolen mittens	50
Same	Best pair silk stockings	1 00
Mrs. Buck, Lockland, O.	2d best pair silk stockings	50

WOMAN'S WORK—Continued.

Owners Name and Postoffice.	Name of Article.	Amount.
Knitting Concluded.		
Mrs. L. E. Rockwell, Quincy, Ill.	Best pair silk socks	$1 00
Anna Miller, Quincy, Ill	2d best pair silk socks	50
Same	Best pair silk mittens	1 00
Mrs. L. C. Covault, Casstown, O	2d best pair silk mittens	50
Miss Dora Case, Columbus, O	Best pair lady's slippers	1 00
Anna Miller, Quincy, Ill	2d best pair lady's slippers	50
Mrs. L. E. Rockwell, Quincy, Ill	Best pair cotton socks	1 00
Mrs. P. Grooms, Brecon, O	2d best pair cotton socks	50
Mrs. J. F. Cissna, Washington C H., O	Best sofa pillow	1 00
Mrs. Lee Harris, Cincinnati, O	2d best sofa pillow	50
Machine sewing—Amateur.		
Mrs. P. Grooms, Brecon, O	Best suit lady's underwear (3 pieces)	2 00
Mrs. C. J. McClure, Xenia, O	2d best suit lady's underwear (3 pieces)	1 00
Same	Best infant's suit	2 00
Mrs. Dr. Messenger, Xenia, O	2d best infant's suit	1 00
Mrs. G. W. Finney, Uhrichsville, O	Best gentleman's shirt	2 00
Mrs. L. P. Wannan, Norwood, O	2d best gentleman's shirt	1 00
Mrs. Maria Davis, Westerville, O	Best fancy apron	1 00
Mrs. L. E. Rockwell, Quincy, Ill	2d best fancy apron	50
Mrs. Buck, Lockland O	Best sun bonnet	1 00
Mrs. Maria Davis, Westerville, O	2d best sun bonnet	50
Mrs. C. J. McClure, Xenia, O	Best dress for a lady	2 00
Mary F. Maxwell, Reynoldsburg, O	2d best dress for a lady	1 00
Mrs. L. P. Wannan, Norwood, O	Best tucked night dress	2 00
Mrs. L. E. Rockwell, Quincy, Ill.	2d best tucked night dress	1 00
Mrs. L. P. Wannan, Norwood, O	Best tucked chemise	2 00
Mrs. C. J. McClure, Xenia, O	2d best tucked chemise	1 00
Same	Best tucked skirt	2 00
Mrs. Thos. Poole, Reynoldsburg, O	2d best tucked skirt	1 00
Mary F. Maxwell, Reynoldsburg, O	Best tucked pillow cases	1 00
Mrs. G. W. Finney, Uhrichsville, O	2d best tucked pillow cases	50
Miss M. Edmondson, Newark, O	Best display of five pieces	3 00
Mrs. C. J. McClure, Xenia, O	2d best display of five pieces	2 00
Delft embroidery—On linen.		
Mamie Hall, Lexington, Ky	Best lunch cloth	2 00
Mrs. Lee Harris, Cincinnati, O	2d best lunch cloth	1 00
Same	Best six doylies	1 00
Mrs. L. Trimble, Marion, O	2d best six doylies	50
Same	Best tray cloth	1 00
Miss Nell C. Smith, Bellville, O	2d best tray cloth	50
Julia Gill, Columbus, O	Best pin cushion	1 00
Alice Linson, South Charleston, O	2d best pin cushion	50
Mamie Hall, Lexington, Ky	Best specimen	1 00
Mrs. Rebecca Holmes, Marion, O	2d best specimen	50
Julia Gill, Columbus, O	Best display of eight pieces	3 00
Old ladies' class.		
Mrs W. R. Sprague, Brice, O	Best embroidered table cover	2 00
Mrs. E. H. Gibbons, Columbus, O	2d best embroidered table cover	1 00
Mrs. W. R. Sprague, Brice, O	Best embroidered skirt	1 00
Mrs. L. E. Rockwell, Quincy, Ill	2d best embroidered skirt	50
Mrs. W. R. Sprague, Brice, O	Best embroidered American flag	1 00
Mary Covault, Casstown, O	Best pair pillow shams	1 00
Mrs. L. E. Rockwell, Quincy, Ill	2d best pair pillow shams	50
Mary Covault, Casstown, O	Best bed spread	2 00
Mrs W. R. Sprague, Brice, O	2d best bed spread	1 00
Mrs. L. E. Rockwell, Quincy, Ill	Best chair cushion	1 00
Mary Covault, Casstown, O	2d best chair cushion	50
Mrs. Sarah Saminis, Westerville, O	Best fancy quilt	1 00
Mrs. N. D. Perry, Columbus, O	2d best fancy quilt	50
Mrs. L. E. Rockwell, Quincy, Ill	Best lady's dress	2 00
Mrs. W. R. Sprague, Brice, O	Best child's dress	1 00
Mrs. L. E. Rockwell, Quincy, Ill	2d best child's dress	50
Mrs. W. R. Sprague, Brice, O	Best suit lady's underwear	1 00
Mary Covault, Casstown, O	Best table mats	1 00
Rhoda R. Wiles, Columbus, O	Best lamp mat	50
Same	Best tidy	50
M. E. Wiltberger, Columbus, O	Best silk knit stockings.	1 00
Mrs. L. E. Rockwell, Quincy, Ill	Best fancy apron	1 00
Same	Best sun bonnet	50

WOMAN'S WORK—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
Child's class.		
Alda Rockwell, Quincy, Ill	Best specimen outline embroidery	$1 00
Louise C. Covault, Casstown, O	2d best specimen outline embroidery	50
Alda Rockwell, Quincy, Ill	Best specimen cross stitch work	1 00
Clara Wright, Xenia, O	2d best specimen cross stitch work	50
Deborah Rinehart, Marion, O	Best specimen drawn thread work	1 00
Louise C. Covault, Casstown, O	2d best specimen drawn thread work	50
Alda Rockwell, Quincy, Ill	Best specimen crochet work	1 00
Deborah Rinehart, Marion, O	2d best specimen crochet work	50
Alda Rockwell, Quincy, Ill	Best specimen plain sewing	1 00
Clara Wright, Xenia, O	2d best specimen plain sewing	50
Deborah Rinehart, Marion, O	Best specimen knitting	1 00
Alda Rockwell, Quincy Ill	2d best specimen knitting	50
Bessie Nichols, Columbus, O	Best specimen silk embroidery	1 00
Alda Rockwell, Quincy, Ill	2d best specimen silk embroidery	50
Same	Best specimen patching	1 00
Louise C. Covault, Casstown, O	2d best specimen patching	50
Lace and tatting work.		
Mrs J. M. Coe, Mount Gilead, O	Best point lace handkerchief	3 00
Mrs. P. Grooms, Brecon, O	2d best point lace handkerchief	2 00
Same	Best point lace collar	2 00
Mrs. E. Mullin, Columbus, O	2d best point lace collar	1 00
Mrs. J. M. Coe, Mount Gilead, O	Best point lace infants cap	2 00
Same	Best point lace specimen	2 00
Mary Goddard, Marysville, O	2d best point lace specimen	1 00
Miss Nell C. Smith, Bellville, O	Best Battenburg lace specimen	2 00
Mrs. P. Grooms, Brecon, O	2d best Battenburg lace specimen	1 00
Mrs. J. M. Coe, Mount Gilead, O	Best display point lace	3 00
Mrs. L P. Wannan, Norwood, O	2d best display point lace	2 00
Mary W. Russell, Springfield, O	Best tatting collar	2 00
Lucy J. Clark, Croton O	2d best tatting collar	1 00
Anna Miller, Quincy, Ill	Best tatting handkerchief	2 00
Miss Mattie Hall, Lexington, Ky	2d best tatting handkerchief	1 00
Anna Miller, Quincy, Ill	Best tatting specimen	2 00
Mrs. L. C. Covault, Casstown O	2d best tatting specimen	1 00
Anna Miller, Quincy Ill	Best display of tatting	3 00
Crochet work.		
Mrs. L. E. Rockwell, Quincy, Ill	Best bed spread	3 00
Miss Mattie Hall, Lexington, Ky	2d best bed spread	2 00
Alice Linson, South Charleston, O	Best lace, cotton or linen	2 00
Anna Miller, Quincy, Ill	2d best lace, cotton or linen	1 00
Mrs. L. E. Rockwell, Quincy, Ill	Best lace, woolen	2 00
Miss Mattie Hall, Lexington, Ky	2d best lace, woolen	1 00
Mrs. P. Grooms, Brecon, O	Best shawl	2 00
Mrs C. J. McClure, Xenia, O	2d best shawl	1 00
Miss Nell C. Smith, Bellville, O	Best infant's sacque	1 00
Miss Mattie Hall, Lexington, Ky	2d best infant's sacque	50
Mrs. B. O. Squire, Bellville, O	Best fascinator	1 00
Mrs. Buck, Lockland, O	2d best fascinator	50
Mrs. P Grooms, Brecon, O	Best collar	1 00
Mrs. A. W. Graham, Reynoldsburg, O	2d best collar	50
Mrs. L. C. Covault, Casstown, O	Best toilet set	1 00
Miss Mattie Hall, Lexington, O	2d best toilet set	50
Miss Jane D. Gilbert, Columbus, O	Best table mats	1 00
Elizabeth Leigh Groveport, O	2d best table mats	50
Mrs. Robert Sproul, Troy, O	Best slippers	1 00
Mrs. Buck, Lockland, O	2d best slippers	50
Mrs. L. E. Rockwell, Quincy, Ill	Best child's hood	1 00
Mrs. P. Grooms, Brecon, O	2d best child's hood	50
Mrs. Rhodebaugh, Columbus, O	Best tidy	1 00
Mrs. Buck, Lockland, O	2d best tidy	50
Mrs. Rebecca Holmes, Marion, O	Best purse	1 00
Miss M. Johnson, Dayton, O	2d best purse	50
Mrs. L. E. Rockwell, Quincy, Ill	Best shirt	2 00
Mrs. D. C. Buck, Columbus, O	2d best shirt	1 00
Mrs. L. E. Rockwell, Quincy, Ill	Best large afghan	3 00
Mrs. B. O. Smith, Bellville, O	2d best large afghan	2 00
Miss Mattie Hall, Lexington, Ky	Best small afghan	2 00
Mrs C. J. McClure, Xenia, O	2d best small afghan	1 00
Anna Miller, Quincy, Ill	Best display of ten pieces	5 00
Miss Mattie Hall, Lexington, Ky	2d best display of ten pieces	2 00

Woman's Work—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
Outline embroidery.		
Miss Buck, Lockland, O	Best mantel lambrequin	$2 00
Miss M. Johnson, Dayton, O	2d best mantel lambrequin	1 00
Mrs. W. C. Franz, Bucyrus, O	Best bed spread	2 00
Miss M. Johnson, Dayton, O	Best table cover	2 00
Mrs. Buck, Lockland, O	2d best table cover	1 00
Mrs. W. C. Franz, Bucyrus, O	Best sofa pillow	2 00
Miss M. Edmondson, Newark, O	2d best sofa pillow	1 00
Mamie Hall, Lexington, Ky	Best lunch cloth	2 00
Mrs. C. M. Nichols, Columbus, O	2d best lunch cloth	1 00
Miss M. Johnson, Dayton, O	Best lunch set	2 00
Mamie Hall, Lexington, Ky	2d best lunch set	1 00
Mrs. Charles Higgins, Columbus, O	Best tidy	1 00
Mrs. C. J. McClure, Xenia, O	2d best tidy	50
Miss M. Johnson, Dayton, O	Best table mats	2 00
Mrs. W. C. Franz, Bucyrus, O	2d best table mats	1 00
Mamie Hall, Lexington, Ky	Best tray cloth	1 00
Mrs. Buck, Lockland, O	2d best tray cloth	50
Miss M. Johnson, Dayton, O	Best six doylies	1 00
Mamie Hall, Lexington, Ky	2d best six doylies	50
Same	Best specimen	1 00
Anna Miller, Quincy, Ill	2d best specimen	50
Mamie Hall, Lexington, Ky	Best display of ten pieces	3 00
Miss M. Johnson, Dayton, O	2d best display of ten pieces	2 00
Embroidery.		
Anna Miller, Quincy, Ill	Best night dress	2 00
Mrs. C. M. Nichols, Columbus, O	2d best night dress	1 00
Mrs. C. J. McClure, Xenia O	Best chemise	2 00
Mary F. Maxwell, Reynoldsburg, O	2d best chemise	1 00
Mrs. M. Rinehart, Marion, O	Best suit underwear	2 00
Minnie E. Bieber, Delaware, O	2d best suit underwear	1 00
Mrs. Lee Harris, Cincinnati, O	Best wall splasher	1 00
Mrs. E. H. Gibbons, Columbus, O	2d best wall splasher	50
Mary W. Russell, Springfield, O	Best handkerchief	1 00
Miss Dora Case, Columbus, O	2d best handkerchief	50
Same	Best specimen	2 00
Mrs. L. E. Rockwell, Quincy, Ill	2d best specimen	1 00
Mary F. Maxwell, Reynoldsburg, O	Best sideboard cover	1 00
Mrs. J. T. Cissna, Washington C. H., O	2d best sideboard cover	50
Cross stitch.		
Mrs. P. Grooms, Brecon, O	Best sofa pillow	2 00
Anna Miller, Quincy, Ill	2d best sofa pillow	1 00
Miss Mattie Hall, Lexington, Ky	Best large afghan	3 00
Mrs. U. J. Cover, Mount Gilead, O	2d best large afghan	2 00
Mrs. L. E. Rockwell, Quincy, Ill	Best small afghan	2 00
Anna Miller, Quincy, Ill	2d best small afghan	1 00
Mrs. L. E. Rockwell, Quincy, Ill	Best chair cushion	1 00
Mrs. L, Trimble, Marion, O	2d best chair cushion	50
Mrs. L. E. Rockwell, Quincy, Ill	Best slippers	2 00
Jessie Hamilton, Columbus, O	2d best slippers	1 00
Mrs. Buck, Lockland, O	Best foot rest	2 00
Mrs. M. Rinehart, Marion, O	2d best foot rest	1 00
Miss M. Johnson, Dayton, O	Best laundry bag	1 00
Mrs. L. E. Rockwell, Quincy, Ill	Best specimen	1 00
Miss Mattie Hall, Lexington, Ky	2d best specimen	50
Anna Miller, Quincy, Ill	Best display of five pieces	3 00
Mrs. C. J. McClure, Xenia, O	2d best display of five pieces	2 00
Silk embroidery.		
Mrs. L. E. Rockwell, Quincy, Ill	Best lady's dress	3 00
Mrs. Buck, Lockland, O	2d best lady's dress	2 00
Mrs. C. M. Nichols, Columbus, O	Best lady's skirt	2 00
Mary F. Maxwell, Reynoldsburg, O	2d best lady's skirt	1 00
Mrs. Buck, Lockland, O	2d best lady's sacque	1 00
Miss Nell C. Smith, Belleville, O	Best silk handkerchief	1 00
Mrs. C. M. Nichols, Columbus, O	2d best silk handkerchief	50
Mrs. Buck, Lockland, O	Best child's dress	1 00
Mrs. Maggie McCray, Reynoldsburg, O	2d best child's dress	50
Mrs. E. H. Gibbons, Columbus, O	Best opera cloak	2 00
Mrs. W. C. Franz, Bucyrus, O	Best table cover	2 00
Elizabeth H. Hess, North Columbus, O	2d best table cover	1 00

WOMAN'S WORK—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
Silk embroidery—Concluded.		
Anna Miller, Quincy, Ill	Best infant's cloak	$2 00
Mrs. Buck, Lockland, O	2d best infant's cloak	1 00
Mrs. P. Grooms, Brecon, O	Best infant's shawl	1 00
Mrs. U. J. Cover, Mount Gilead, O	2d best infant's shawl	50
Mrs. L. E. Rockwell, Quincy, Ill	Best infant's skirt	1 00
Anna Miller, Quincy, Ill	2d best infant's skirt	50
Mrs. W. C. Franz, Bucyrus, O	Best infant's sacque	1 00
Mrs. P. Grooms, Brecon, O	2d best infant's sacque	50
Elizabeth Leigh, Groveport, O	Best specimen	2 00
Miss Dora Case, Columbus, O	2d best specimen	1 00
Miss Nell C. Smith, Bellville, O	Best display of five pieces	5 00
Mrs. W. C. Franz, Bucyrus, O	2d best display of five pieces	2 00
Roman embroidery.		
Mamie Hall, Lexington, Ky	Best center piece	2 00
Mrs. L. Trimble, Marion O	2d best center piece	1 00
Miss Dora Case, Columbus, O	Best tray cloth	2 00
Anna Miller, Quincy, Ill	2d best tray cloth	1 00
Mrs. C. M. Nichols, Columbus, O	Best lunch cloth	2 00
Anna Miller, Quincy, Ill	2d best lunch cloth	1 00
Mrs. L. E. Rockwell, Quincy, Ill	Best specimen	2 00
Mamie Hall, Lexington, Ky	2d best specimen	1 00
Anna Miller, Quincy, Ill	Best six doylies	2 00
Mrs. Buck, Lockland, O	2d best six doylies	1 00
Mrs. W. C. Franz, Bucyrus, O	Best pincushion	1 00
Mrs. Rebecca Holmes, Marion, O	2d best pincushion	50
Mrs. Buck, Lockland, O	Best chair cushion	2 00
Mrs. M. Rinehart, Marion, O	2d best chair cushion	1 00
Mrs. W. C. Franz, Bucyrus, O	Best display of five pieces	3 00
Anna Miller, Quincy, Ill	2d display of five pieces	2 00
Drawn thread work.		
Mollie Koerner, Columbus, O	Best large table cover	2 00
Mrs. L. B. Wannan, Norwood, O	2d best large table cover	1 00
Mrs. L. E. Rockwell, Quincy, Ill	Best center piece	2 00
Mrs. Robert Sproul, Troy, O	2d best center piece	1 00
Mrs. L. E. Rockwell, Quincy, Ill	Best tray cloth	2 00
Anna Miller, Quincy, Ill	2d best tray cloth	1 00
Miss Mattie Hall, Lexington, Ky	Best dresser scarf	2 00
Miss Dora Case, Columbus, O	2d best dresser scarf	1 00
Mrs. Lee Harris, Cincinnati, O	Best sideboard scarf	2 00
Mrs. L. P. Wannan, Norwood, O	2d best sideboard scarf	1 00
Mrs. P. Grooms, Brecon, O	Best six doylies	2 00
Anna Miller, Quincy, Ill	2d best six doylies	1 00
Mrs. Dr. Messenger, Xenia, O	Best six large dinner napkins	2 00
Mrs. C. J. McClure, Xenia, O	2d best six large dinner napkins	1 00
Mrs. L. E. Rockwell, Quincy, Ill	Best elaborate linen sheet	1 00
Mrs. Dr. Messenger, Xenia, O	2d best elaborate linen sheet	50
Mrs. L. E. Rockwell, Quincy, Ill	Best tidy	1 00
Mrs. J. F. Cissna, Washington C. H., O	2d best tidy	50
Mrs. Robert Sproul Troy, O	Best handkerchief	1 00
Mrs. L. E. Rockwell, Quincy, Ill	2d best handkerchief	50
Mrs. M. Rinehart, Marion, O	Best specimen	1 00
Mollie Koerner, Columbus, O	2d best specimen	50
Anna Miller, Quincy, Ill	Best specimen on silk	1 00
Mrs. L. E. Rockwell, Quincy, Ill	2d best specimen on silk	50
Mrs. P. Grooms, Brecon, O	Best specimen hemstitching	1 00
Mrs. Robert Sproul, Troy, O	2d best specimen hemstitching	50
Mollie Koerner, Columbus, O	Best display of ten pieces	3 00
Anna Miller, Quincy, Ill	2d best display of ten pieces	2 00
Ornamental work.		
Anna Miller, Quincy, Ill	Best specimen bead work	2 00
Mrs. R. J. Gardiner, Columbus, O	2d best specimen bead work	1 00
Mrs. M. Rinehart, Marion, O	Best specimen hair work	2 00
Mary W. Russell, Springfield, O	2d best specimen hair work	1 00
Mrs. J. L. Gill, Columbus, O	Best specimen paper flowers	2 00
Mrs. Lee Harris, Cincinnati, O	2d best specimen paper flowers	1 00
Miss Nell C. Smith, Bellville, O	Best fancy calendar	1 00
Alice R. Wiles, Columbus, O	2d best fancy calendar	50

WOMAN'S WORK—Continued.

Owner's Name and Postoffice.	Kind of Article.	Amount.
Ornamental Work—Concluded.		
M. J. D. Snow, Columbus, O.	Best jewel box	$1 00
Mrs. Ada B. Irwin, Westerville, O	2d best jewel box	50
Alice R. Wiles, Columbus, O	Best blotter	1 00
Frances A. Bryant, Springfied, O.	2d best blotter	50
Mrs. C. J. McClure, Xenia, O	Best dressed doll	1 00
Mrs. L. E. Rockwell, Quincy, Ill.	2d best dressed doll	50
Open to Amateurs Only.		
Mrs. J. L. Gill, Columbus, O	Best specimen paper flowers	1 00
Mary Snedeker, Delaware, O	2d best specimen paper flowers	50
Mrs. J. L. Gill, Columbus, O	Best paper lamp shade	1 00
Fabric Painting.		
Frances A. Bryant, Springfield, O	Best painting on silk	2 00
Carrie Van Sant, Delaware, O	2d best painting on silk	1 00
Carrie F. Masteller, Newark, O	Best painting on satin	2 00
Alice M. Hipple, Delaware, O	2d best painting on satin	1 00
Mrs. Lee Harris, Cincinnati, O	Best painting on velvet	2 00
Alice M. Hipple, Delaware, O	2d best painting on velvet	1 00
Mrs Lee Harris, Cincinnati, O	Best painting on bolting cloth	2 00
Carrie F. Mastellar, Newark, O	2d best painting on bolting cloth	1 00
Mrs. Lee Harris, Cincinnati, O	Best painting on wood	2 00
Carrie F. Mastellar, Newark, O	2d best painting on wood	1 00
Same	Best painting on celluloid	2 00
Mary W. Russell, Springfield, O.	2d best painting on celluloid	1 00
Frances A. Bryant, Springfield, O,	Best tapestry painting	2 00
Mrs. S. A. Graves, Findlay, O	2d best tapestry painting	1 00
Carrie F. Mastellar, Newark, O	Best lustre painting	2 00
Mrs. L. P. Wannan, Norwood, O	2d best lustre painting	1 00
Carrie Van Sant, Delaware, O	Best hand painted fan	2 00
Mrs. Buck, Lockland, O	2d best hand painted fan	1 00
Carrie F. Mastellar, Newark, O	Best hand painted plaque	2 00
Frances A. Bryant, Springfield, O	2d best hand painted plaque	1 00
Carrie Van Sant, Delaware, O	Best hand painted screen	3 00
Carrie F. Mastellar, Newark, O	Best hand painted banner	2 00
Carrie Van Sant, Delaware, O	2d best hand painted banner	1 00
Frances A. Bryant, Springfield, O	Best display of ten pieces	5 00
Carrie F. Mastellar, Newark, O	2d best display of ten pieces	3 00
Art Needle Work—For Amateurs.		
Mrs. B. O. Squire, Bellville, O	Best mantel lambrequin	3 00
Mrs. E. H. Gibbons, Columbus, O	2d best mantel lambrequin	2 00
Marie E. Fohrman, Columbus, O	Best sofa pillow	2 00
Miss M. Edmondson, Newark, O	2d best sofa pillow	1 00
Mamie Hall, Lexington, Ky	Best lunch cloth	3 00
Carrie M. Gilbert, Columbus, O	2d best lunch cloth	2 00
Mamie Hall, Lexington, Ky	Best tray cloth	2 00
Madge M. Miller, Washington C. H., O	2d best tray cloth	1 00
Julia Gill, Columbus, O	Best handkerchief case	2 00
Miss M. Johnson, Dayton, O	2d best handkerchief case	1 00
Julia Gill, Columbus, O	Best slipper case	2 00
Mrs. Buck, Lockland, O	2d best slipper case	1 00
Mrs. Mary Gleason, Columbus, O	Best glove case	2 00
Miss M. Johnson, Dayton, O	2d best glove case	1 00
Julia Gill, Columbus, O	Best night dress case	2 00
Miss M. Johnson, Dayton, O	2d best night dress case	1 00
Julia Gill, Columbus, O	Best broom case	2 00
Same	Best photograph case	2 00
Miss M. Johnson, Dayton, O	2d best photograph case	1 00
Mrs. Buck, Lockland, O	Best scrap basket	2 00
Mrs. B. O. Squire, Bellville, O	Best table scarf	2 00
Mrs. Charles Higgins, Columbus, O	2d best table scarf	1 00
Mrs. B. O. Squire, Bellville, O	Best dresser scarf	2 00
Mrs. Charles Higgins, Columbus, O	2d best dresser scarf	1 00
Mamie Hall, Lexington, Ky	Best table center	2 00
Mrs. Jos. Guthridge, Columbus, O	2d best table center	1 00
Mamie Hall, Lexington, Ky	Best six cake doylies	2 00
Mrs. P. Grooms, Brecon, O	2d best six cake doylies	1 00
Madge M. Miller, Washington C. H., O	Best picture mat and frame	2 00
Mrs. B. O. Squire, Bellville, O	2d best picture mat and frame	1 00

WOMAN'S WORK—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
Art Needle Work for Amateurs—Concluded.		
Mary M. King, Columbus, O	Best table cloth and napkins, 13 pieces	$4 00
Mrs. J. F. Cissna, Washington C. H., O	2d best table cloth and napkins, 13 pieces	2 00
Mamie Hall, Lexington, Ky	Best jewel embroidery	2 00
Elizabeth Leigh, Groveport, O	2d best jewel embroidery	1 00
Madge M. Miller, Washington, C. H., O	Best specimen Battenburg work	1 00
Anna Miller, Quincy, Ill	2d best specimen Battenburg work	50
Miss M. Johnson, Dayton, O	Best Bulgarian portieres	2 00
Mrs. Buck, Lockland, O	Best three-panel fire screen	4 00
Mrs. L. E. Rockwell, Quincy, Ill	Best table cover	2 00
Carrie Van Sant, Delaware, O	2d best table cover	1 00
Julia Gill, Columbus, O	Best book cover	1 00
Mrs. M. E. Cunningham, Newark, O	2d best book cover	50
Mrs. Joseph Guthridge, Columbus, O	Best sideboard cover	2 00
Miss M. Johnson, Dayton, O	2d best sideboard cover	1 00
Mrs. B. O. Squire, Bellville, O	Best hand screen	2 00
Same	Best lamp screen	2 00
Jessie Hamilton, Columbus, O	Best head rest	2 00
Mrs. L. P. Wannan, Norwood, O	2d best head rest	1 00
Mrs. P. Grooms, Brecon, O	Best slippers	2 00
Mrs. L. E. Rockwell, Quincy, Ill	2d best slippers	1 00
Mrs. M. E. Cunningham, Newark, O	Best shopping bag	2 00
Mrs. Buck, Lockland, O	2d best shopping bag	1 00
Miss M. Johnson, Dayton, O	Best laundry bag	2 00
Mrs. W. C. Franz, Bucyrus, O	2d best laundry bag	1 00
Mrs. P. Grooms, Brecon, O	Best fancy tidy	2 00
Miss M. Johnson, Dayton, O	2d best fancy tidy	1 00
Mrs. B. O. Squire, Bellville, O	Best fancy pincushion	1 00
Julia Gill, Columbus, O	2d best fancy pincushion	50
Mrs. C. M. Nichols, Columbus, O	Best lady's hose	2 00
Mrs. Buck, Lockland, O	2d best lady's hose	1 00
Mrs. Charles Higgins, Columbus, O	Best ottoman	2 00
Jessie Hamilton, Columbus, O	2d best ottoman	1 00
Margaret Roberts, Columbus, O	Best single specimen	2 00
Mrs. J. E. Harris, Columbus, O	2d best single specimen	1 00
Mrs. W. C. Franz, Bucyrus, O	Best display of 12 pieces	10 00
Madge M. Miller, Washington C. H., O	2d best display of 12 pieces	5 00
Art Needle Work—For Professionals.		
Mrs. A. Hyson, Columbus, O	Best display	10 00
Mrs. V. Murphy, Columbus, O	2d best display	5 00
Mrs. A. Hyson, Columbus, O	Best table set of 9 pieces	8 00
Mrs. V. Murphy, Columbus, O	2d best table set of 9 pieces	4 00
Same	Best single specimen	5 00
Mrs. A. Hyson, Columbus, O	2d best single specimen	3 00
China Painting—Amateur List.		
Mrs. Jos. Guthridge, Columbus, O	Best chocolate set	2 00
Frances A. Bryant, Springfield, O	2d best chocolate set	1 00
Alice M. Hipple, Delaware, O	Best ice cream set	2 00
M. E. Wiltberger, Columbus, O	Best six cups and saucers	3 00
M. M. Hambline, Columbus, O	2d best six cups and saucers	2 00
M. E. Wiltberger, Columbus, O	Best six plates	3 00
Mrs. D. C. Buck, Columbus, O	2d best six plates	2 00
Clara A. Lawler, Columbus, O	Best tankard	2 00
M. E. Wiltberger, Columbus, O	2d best tankard	1 00
Same	Best punch bowl	2 00
Clara A. Lawler, Columbns, O	2d best punch bowl	1 00
Hattie Dobell, Columbus, O	Best dresser set	3 00
Elizabeth Leigh, Groveport, O	2d best dresser set	2 00
Mrs. Ruth E. McAnally, Troy, O	Best jardiniere	2 00
Mrs. Jos. Guthridge, Columbus, O	3d best jardiniere	1 00
Frances A. Bryant, Springfield, O	Best plaque	2 00
Hattie Dobell, Columbus, O	2d best plaque	1 00
Same	Best specimen of figure	2 00
Miss V. Kiser, Columbus, O	2d best specimen of figure	1 00
Elizabeth Leigh, Groveport, O	Best specimen of china painting	2 00
M. E. Wiltberger, Columbus, O	2d best specimen of china painting	1 00
Miss V. Kiser, Columbus, O	Best specimen of gold paste	2 00
Elizabeth Leigh, Groveport, O	2d best specimen of gold paste	1 00
Hattie Dobell, Columbus, O	Best salad dish	2 00
Alice M. Hipple, Delaware, O	2d best salad dish	1 00

WOMAN'S WORK—Concluded.

Owner's Name and Postoffice.	Name of Article.	Amount.
China Painting—Amateur List.		
Miss V. Kiser, Columbus, O	Best cake plate	$2 00
Mrs. J. P. Weisman, Columbus, O	2d best cake plate	1 00
Hattie Dobell, Columbus, O	Best tray	2 00
M. E. Wiltberger, Columbus, O	2d best tray	1 00
Same	Best vase	2 00
Elizabeth Leigh, Groveport, O	2d best vase	1 00
M. E. Wiltberger, Columbus, O	Best display of 10 pieces	5 00
Clara A. Lawler, Columbus, O	2d best display of 10 pieces	3 00
Mrs. D. C. Buck, Columbus, O	Best specimen of Royal Worcester	2 00
M. M. Hambline, Columbus, O	2d best specimen of Royal Worcester	1 00
China Painting—Professional List.		
Alta Morris, Columbus, O	Best specimen	4 00
Mrs. L. C. Davis, Columbus, O	2d best specimen	2 00
Alta Morris, Columbus, O	Best portrait	4 00
H. N. Barnitz, Urbana, O	2d best portrait	2 00
Mrs. Lee Harris, Cincinnati, O	Best figure	4 00
Alta Morris, Columbus, O	2d best figure	2 00
Same	Best panel	3 00
Helen B. Windle, Columbus, O	2d best panel	1 00
Alta Morris, Columbus, O	Best plaque	3 00
Mrs. Laura C. Davis, Columbus, O	2d best plaque	1 00
Alta Morris, Columbus, O	Best large lamp	3 00
Mrs. Ed. Mahon, Delaware, O	Best specimen conventional work	3 00
Mrs. Laura C. Davis, Columbus, O.	2d best specimen conventional work	1 00
Helen B. Windle, Columbus, O	Best tankard	2 00
Alta Morris, Columbus, O	2d best tankard	1 00
Same	Best punch bowl	2 00
Mrs. Laura C. Davis, Columbus, O	2d best punch bowl	1 00
Alta Morris, Columbus, O	Best dresser set	3 00
Mrs. Laura C. Davis, Columbus, O	2d best dresser set	2 00
Same	Best six cups and saucers	3 00
Alta Morris, Columbus, O	2d best six cups and saucers	2 00
Mrs. Laura C. Davis, Columbus, O	Best six plates	3 00
Alta Morris, Columbus, O	2d best six plates	2 00
Nora Prentice, Columbus, O	Best specimen enamel	2 00
Mrs. Laura C. Davis, Columbus, O	2d best specimen enamel	1 00
Same	Best specimen paste	2 00
Alta Morris, Columbus, O	2d best specimen paste	1 00
Same	Best specimen metal	2 00
Mrs. Laura C. Davis, Columbus, O	2d best specimen metal	1 00
Same	Best course set	4 00
Alta Morris, Columbus, O	2d best course set	2 00
Same	Largest and finest display	8 00
Mrs. Laura C. Davis, Columbus, O	2d best largest and finest display	5 00

PRESERVES, PICKLES, ETC.

Owner's Name and Postoffice.	Name of Article.	Amount.
Mrs. S. W. Latham, Columbus, O	Best canned tomatoes	$2 00
Mrs. W. H. Snedeker, Delaware, O	2d best canned tomatoes	1 00
O. C. Stockman, Prospect, O	Best canned blackberries	2 00
Mrs. L. Trimble, Marion, O	2d best canned blackberries	1 00
Mrs. E. G. Taggart, Lewis Center, O	Best canned raspberries	2 00
O. C. Stockman, Prospect, O	2d best canned raspberries	1 00
Mrs. E. G. Taggart, Lewis Center, O	Best canned peaches	2 00
Mrs. L. E. Davis, Zimmer, O	2d best canned peaches	1 00
Mrs. M. B. Clutter, Alexandria, O	Best canned pears	2 00
Mrs. Huston Thomas, Plumwood	2d best canned pears	1 00
Mrs. M. B. Clutter, Alexandria, O	Best canned apples	2 00
Mrs. E. G. Taggart, Lewis Center, O	2d best canned apples	1 00

Pickles, Preserves, Etc.—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
Mrs. Maggie McCray Reynoldsburg. O	Best canned quinces	$2 00
Mrs. E G. Taggart, Lewis Center, O	2d best canned quinces	1 00
Mrs. W. H. Snedeker, Delaware, O	Best canned strawberries	2 00
Mrs. M. B. Clutter. Alexandria, O	2d best canned strawberries	1 00
Mrs. L. E. Davis, Zimmer, O	Best canned cherries	2 00
O. C. Stockman Prospect, O	2d best canned cherries	1 00
Mrs. S. P. McFarland, Sunburry, O	Best canned gooseberries	2 00
Mrs. Huston Thomas, Plumwood, O	2d best canned gooseberries	1 00
O. C. Stockman. Prospect. O	Best canned currants	2 00
Mrs. W. H. Snedeker, Delaware, O	2d best canned currants	1 00
Mrs. L. E. Davis Zimmer, O	Best canned grapes	2 00
Mrs. M. Rinehart, Marion, O	2d best canned grapes	1 00
Mrs. L. Trimble. Marion. O	Best canned plums	2 00
Mrs. Maggie McCray, Reynoldsburg, O	2d best canned plums	1 00
Mrs. Thos. Poole. Reynoldsburg, O	Best canned pears	2 00
O. C. Stockman, Prospect, O	Best canned beans	2 00
Mrs. H. Bieber. Delaware, O	2d best canned beans	1 00
Mrs. M. B. Clutter, Alexandria, O	Best canned rhubarb	2 00
Mrs. Maggie McCray. Reynoldsburg, O	2d best canned rhubarb	1 00
Mrs. L. Trimble Marion, O	Largest and best variety canned fruit	5 00
Mrs. Thos. Poole. Reynoldsburg, O	2d largest and best variety canned fruit	3 00
Mrs. Huston Thomas, Plumwood, O	Largest and best variety pickles	5 00
Mrs. M. Rinehart. Marion, O	2d largest and best variety pickles	3 00
Mrs. L. Trimble, Marion, O	Largest and best variety jellies	5 00
Mrs. J. B. Morris. Columbus. O	2d largest and best variety jellies	3 00
Mrs. U. J. Cover. Mount Gilead, O	Best blackberry jelly	2 00
Mrs. H. Bieber, Delaware. O	2d best blackberry jelly	1 00
Mrs. M B. Clutter. Alexandria, O	Best cherry jelly	2 00
Mrs. L. E. Davis, Zimmer, O	2d best cherry jelly	1 00
Mrs. E. G Taggart, Lewis Center, O	Best cranberry jelly	2 00
Mrs. M. B. Clutter. Alexandria. O	2d best cranberry jelly	1 00
Mrs. Maggie McCray, Reynoldsburg, O	Best gooseberry jelly	2 00
Mrs. L E. Davis, Zimmer, O	2d best gooseberry jelly	1 00
L. Anna Weisman, Columbus. O	Best grape jelly	2 00
Mrs. U. J. Cover, Mount Gilead, O	2d best grape jelly	1 00
Mary Snedeker Columbus O	Best plum jelly	2 00
L. Anna Weisman, Columbus, O	2d best plum jelly	1 00
Mrs. L. Trimble, Marion, O	Best raspberry jelly	2 00
Mary Snedeker, Delaware, O	2d best raspberry jelly	1 00
Mrs. L. E. Davis, Zimmer, O	Best strawberry jelly	2 00
Mrs. Maggie McCray. Reynoldsburg, O	2d best strawberry jelly	1 00
Mrs. E. G. Taggart, Lewis Center, O	Best apple jelly	2 00
Mrs. W. H. Snedeker, Delaware, O	2d best apple jelly	1 00
Same	Best pear jelly	2 00
Mrs. Thos. Poole, Reynoldsburg, O	2d best pear jelly	1 00
Mrs. E. G. Taggart, Lewis Center, O	Best crab apple jelly	2 00
Mary Snedeker, Delaware, O	2d best crab apple jelly	1 00
Mrs. H. Bieber, Delaware, O	Best currant jelly	2 00
Mrs. U. J. Cover, Mount Gilead, O	2d best currant jelly	1 00
Mrs. A. W. Graham, Reynoldsburg, O	Best peach jelly	2 00
Mrs. W. H. Snedeker, Delaware, O	2d best peach jelly	1 00
Mrs Thos. Poole, Reynoldsburg, O	Best quince jelly	2 00
Mrs. E. G. Taggart. Lewis Center, O	2d best quince jelly	1 00
Mrs M. B. Clutter, Alexandria, O	Best preserved quinces	2 00
Mrs. Maggie McCray, Reynoldsburg, O	2d best preserved quinces	1 00
Mrs. M. B. Clutter, Alexandria, O	Best preserved pears	2 00
Mrs. E. G. Taggart, Lewis Center, O.	2d best preserved pears	1 00
Mrs. M. B. Clutter Alexandria, O	Best preserved apples	2 00
Mrs. Thos. Poole, Reynoldsburg, O	2d best preserved apples	1 00
Mrs. W. H. Snedeker, Delaware, O	Best preserved plums	2 00
Mrs. L. Trimble. Marion, O	2d best preserved plums	1 00
Mrs. M. B. Clutter, Alexandria, O	Best preserved cherries	2 00
Mrs. L. E. Davis. Zimmer, O	2d best preserved cherries	1 00
Mrs. H. Bieber, Delaware, O	Best preserved crab apples	2 00
Susie E. Perry. Columbus. O	2d best preserved crab apples	1 00
Mrs. Thos. Poole. Reynoldsburg, O	Best preserved grapes	2 00
Mrs. H. Bieber, Delaware, O	2d best preserved grapes	1 00
Same	Best preserved strawberries	2 00
Mrs. M. B. Clutter. Alexandria, O	2d best preserved strawberries	1 00
Mrs. A. W. Graham, Reynoldsburg, O	Best preserved blackberries	2 00
Mrs. Thos. Poole. Reynoldsburg, O	2d best preserved blackberries	1 00
Mrs. H. Bieber, Delaware, O	Best preserved peaches	2 00
Mrs. Thos. Poole, Reynoldsburg, O	2d best preserved peaches	1 00
Mrs. L. E. Davis, Zimmer, O	Best preserved currants	2 00
Mrs. A. W. Graham, Reynoldsburg, O.	2d best preserved currants	1 00

PICKLES, PRESERVES, ETC.—Concluded.

Owner's Name and Postoffice.	Name of Article.	Amount.
Mrs. M. B Clutter, Alexandria, O	Best preserved gooseberries	$2 00
Mary F. Maxwell, Reynoldsburg, O	2d best preserved gooseberries	1 00
Mrs. L. Trimble, Marion, O	Best preserved melons	2 00
Mrs. Huston Thomas, Plumwood, O	2d best preserved melons	1 00
Mrs. N. D. Perry, Columbus, O	Best tomato catsup	2 00
Mary Snedeker, Delaware, O	2d best tomato catsup	1 00
Mrs. E. G. Taggart, Lewis Center, O	Best cucumber catsup	2 00
Mrs. M. Rinehart, Marion, O	2d best cucumber catsup	1 00
Mrs. E. G. Taggart, Lewis Center, O	Best pickled cucumbers	2 00
Mrs. L. E. Davis, Zimmer, O	2d best pickled cucumbers	1 00
Mrs. E. G. Taggart, Lewis Center, O	Best pickled peaches	2 00
Mrs. W. H. Snedeker, Delaware, O	2d best pickled peaches	1 00
Same	Best pickled pears	2 00
Mary F. Maxwell, Reynoldsburg, O	2d best pickled pears	1 00
Mrs. E. G. Taggart, Lewis Center, O	Best mixed pickles	2 00
Mrs. M. B. Clutter, Alexandria, O	2d best mixed pickles	1 00
Mrs. L. Trimble, Marion, O	Best pickled tomatoes	2 00
Mrs. Thos. Poole, Reynoldsburg, O	2d best pickled tomatoes	1 00
Mrs. M. Rinehart, Marion, O	Best pickled mangoes	2 00
O. C. Stockman, Prospect, O	2d best pickled mangoes	1 00
Mrs. M. B. Clutter, Alexandria, O	Best pickled melons	2 00
Mrs. Thos. Poole, Reynoldsburg, O	2d best pickled melons	1 00
Mrs. M. B. Clutter, Alexandria, O	Best pickled onions	2 00
Mrs. L. Trimble, Marion, O	2d best pickled onions	1 00
Mrs. S. U. Paine, Columbus, O	Best pickled gherkins	2 00
Mrs. L. E. Davis, Zimmer, O	2d best pickled gherkins	1 00
Same	Best pickled cabbage	2 00
Mrs. L. Trimble, Marion, O	2d best pickled cabbage	1 00
Same	Best pickled cauliflower	2 00
Mrs. M. Rinehart, Marion, O	2d best pickled cauliflower	1 00
Mrs. L. E. Davis, Zimmer, O	Best chili sauce	2 00
Mrs. E. G. Taggart, Lewis Center, O	2d best chili sauce	1 00
Mrs. L. Trimble, Marion, O	Best chow chow	2 00
Mrs. M. B. Clutter, Alexandria, O	2d best chow chow	1 00

CEREAL FOODS.

Owner's Name and Postoffice.	Name of Article.	Amount.
Mrs. Maggie McCray, Reynoldsburg, O	Best yeast bread	$2 00
Mrs. M. B. Clutter, Alexandria, O	2d best yeast bread	1 00
Mary F. Maxwell, Reynoldsburg, O	Best corn bread	2 00
Mrs. M. B. Clutter, Alexandria, O	2d best corn bread	1 00
Mary F. Maxwell, Reynoldsburg, O	Best rye bread	2 00
Mrs. Maggie McCray, Reynoldsburg, O	2d best rye bread	1 00
Mrs. A. W. Graham, Reynoldsburg, O	Best brown bread	2 00
Mrs. Maggie McCray, Reynoldsburg, O	2d best brown bread	1 00
Mrs. M. B. Clutter, Alexandria, O	Best Graham bread	2 00
Mrs. J. B. Norris, Columbus, O	2d best Graham bread	1 00
Mary F. Maxwell, Reynoldsburg, O	Best domestic raised biscuit	2 00
Mrs. Maggie McCray, Reynoldsburg, O	2d best domestic raised biscuit	1 00
Mrs. L. W. Taggart, Lewis Center, O	Best layer cake	2 00
Mrs. W. J. Carty, Columbus, O	2d best layer cake	1 00
Mrs. L. W. Taggart, Lewis Center, O	Best white loaf cake	2 00
Mary F. Maxwell, Reynoldsburg, O	2d best white loaf cake	1 00
Mrs. E. G. Taggart, Lewis Center, O	Best fruit cake	2 00
Mrs. Maggie McCray, Reynoldsburg, O	2d best fruit cake	1 00
Mrs. E. G. Taggart Lewis Center, O	Best marble cake	2 00
Mrs. Maria Davis, Westerville, O	2d best marble cake	1 00
Mary F. Maxwell, Reynoldsburg, O	Best chocolate cake	2 00
Mrs. L. W. Taggart, Lewis Center, O	2d best chocolate cake	1 00
Mrs. M. B. Clutter, Alexandria, O	2d best caramel cake	1 00
Mrs. L. W. Taggart, Lewis Center, O	Best cocoanut cake	2 00
Mrs. M B. Clutter, Alexandria, O	Best ginger snaps	1 00
Mary F. Maxwell, Reynoldsburg, O	Best sweet wafers	1 00

FINE ARTS—H. S. GRIMES, Member in Charge.

DRAWINGS, PAINTINGS, ETC.

Owner's Name and Postoffice.	Name of Article.	Amount.
Professional list.		
Elizabeth Heil, Zimmer O.	Best portrait in oil from sittings	$10 00
H. N. Barnitz, Urbana, O.	Best portrait in oil from copy	5 00
Herman Baker, Columbus, O.	Best painting in oil from life of animal	10 00
Same	Best landscape from nature in oil	10 00
H. N. Barnitz, Urbana, O.	Best specimen object painting in oil	5 00
Elizabeth Heil, Zimmer, O.	Best figure piece in oil	5 00
Miss G. C. Price, Chicago, Ill.	Best exhibit of oil paintings	20 00
H. N. Barnitz, Urbana, O.	Best portrait in water colors	10 00
Mrs. Lee Harris, Cincinnati, O.	Best landscape in water colors	10 00
Alta Morris, Columbus, O.	Best specimen object painting, water colors.	5 00
Herman Baker, Columbus, O.	Best exhibit in water colors	15 00
Mrs. G. C. Price, Chicago, Ill.	Best free hand crayon draw. in blk. and white	5 00
Henry Fenstermacher, Springfield, O.	Best portrait, free hand stump drawing	5 00
Oil painting—Amateur list.		
Mrs. S. A. Graves, Findlay, O.	Best portrait	5 00
Miss Ada Eichenlaub, Columbus, O.	Best specimen from copy	3 00
Alice M. Hipple, Delaware, O.	Best landscape from nature	5 00
Maud Myers, Columbus, O.	Best landscape from copy	3 00
B. W. Warden, Columbus, O.	Best figure from life	5 00
Helen L. Bitzer, Columbus, O.	Best object painting from nature	5 00
Mrs. Ruth E. McAnally, Troy, O.	Best object painting from copy	3 00
Alice M. Hipple, Delaware, O.	Best three-panel screen	3 00
Frances A. Bryant, Springfield, O.	Best single-panel screen	2 00
Same	Best landscape on satin	3 00
B. W. Warden, Columbus, O.	Best exhibition of paintings	8 00
Water colors—Amateur.		
Carrie Van Sant, Delaware, O.	Best portrait	5 00
Florence M. Hayden, Columbus, O.	Best figure piece, copy	3 00
Carrie F. Mastetter, Newark, O.	Best landscape from nature	5 00
Miss Daisy Scott, Columbus, O.	Best landscape copy	3 00
E. C. Moore, Columbus, O.	Best object painting from nature	5 00
Miss Emma Buffington, Delaware, O.	Best object painting from copy	3 00
E. C. Moore, Columbus, O.	Best exhibition of paintings	8 00
Drawing—Amateur list.		
Maud Myers, Columbus, O.	Best shaded charcoal drawing from object	3 00
Helen L. Bitzer, Columbus, O.	Best shaded stump drawing	3 00
B. W. Warden, Columbus, O.	Best shaded brush drawing	3 00
Same	Best shaded free hand pen drawing	3 00
Mrs. S. A. Graves, Findlay, O.	Best landscape sketch from nature	3 00
Mamie L. Dickenson, Columbus, O.	Best fine character etchings	3 00
B. W. Warden, Columbus, O.	Best display of drawings	5 00
Pastel Drawing.		
Miss G. C. Price, Chicago, Ill.	Best landscape from nature	5 00
Same	Best figure piece original	5 00
Mrs. S. A. Graves, Findlay, O.	Best figure piece from copy	3 00
Frances A. Bryant, Springfield, O.	Best still life, original	3 00
Mary W. Russell, Springfield, O.	Best fruit or flower	3 00
Frances A. Bryant, Springfield, O.	Best drawing of animal	3 00
H. N. Barnitz, Urbana, O.	Best portrait copied from photograph, finished from sittings	5 00
Wood carving.		
Alice M. Hippie, Delaware, O.	Best large screen	5 00
Mrs. S. E. Butt, Nelsonville, O.	Best chair	3 00
Mary W. Russell, Springfield, O.	Best specimen	3 00
School work		
Cincinnati Schools, Cincinnati, O.	Best work from city schools.	Silver medal.

EXHIBITS IN NON-PREMIUM DEPARTMENTS.

AGRICULTURAL IMPLEMENTS AND MACHINERY.

ALBERT HALE—Member in charge.

B. F. Avery & Son, Louisville, Ky	Plows, cultivators, harrows, etc.
S. L. Allen & Co., Philadelphia, Pa	Garden drills, hoes and cultivators.
Burch Plow Co., Crestline, O	Plows.
A. Beech Sons & Co., Elizabethtown, Pa	Plows.
Automatic Bicycle Pump, Columbus, O	Bicycle pumps.
Bateman Manufacturing Co., Greenlock, N. J	Potato planters, cultivators, etc.
Cedar Rapids Pump Co., Cedar Rapids, Ia	Pumps and tanks.
Columbus Machine Co., Columbus, O	Gasoline engines.
Columbus Electric Machine Co., Columbus, O.	Gasoline engines.
Clipper Plow Co., Defiance, O	Plows and cultivators.
The J. I. Case Co., Racine, Wis	Engines, separators, stackers, etc.
Collins Plow Co., Quincy, Ill	Presses, cultivators, etc.
Cyclone Fence Co., Prospect, O	Fence exhibit.
Crescent Metalic Stay Fence Co., Covington, O	Fence exhibit.
Dann Manufacturing Co., Columbus, O	Mills, corn cutters, lawn swings, etc.
Common Sense Corn Husker Co	Corn huskers.
Buffkin Feeder Co., Indianapolis, Ind	Buffkin feeders.
Bradley Manufacturing Co., Bradley, Ill	Plows, cultivators, harrows, corn planters, etc.
A. C. Evans Manufacturing Co, Springfield, O.	Planters, drills, harrows, etc.
S. P. Castle & Co., Urbana, O	Steam evaporator.
Empire Drill Co., Louisville, Ky	Grain drills.
Combination Fence Co., Derby, O	Fence exhibit.
Frost Wire Fence Co., Cleveland, O	Fence exhibit.
Foos Manufacturing Co., Springfield, O	Engines, mills, corn shellers, etc.
Fulton Machine Co., Canal Fulton, O	Land rollers.
Hydraulic Press Co., Mt. Gilead, O	Hydraulic press.
Hayes Pump and Planter Co., Galva, Ill	Pumps, corn planters, cultivators, etc.
W. R. Harrison & Co., Massillon, O	Feed cutters and land rollers.
Haworth & Sons Manufacturing Co., Decater, Ill	Corn planters and grain drills.
Hard Steel Wire Fence Co., Cleveland, O	Fence exhibit.
Paschall Fence Co	Fence exhibit.
Hercules Fence Co., Columbus, O	Fence exhibit.
Hoffhines Fence Co., Tontogany, O	Fence exhibit.
American Steel Wire Fence Co., Cleveland, O.	Fence exhibit.
Kansas City Hay Press Co., Kansas City, Mo	Hay press and stump puller.
Gaison Manufacturing Co., Waynesboro, Pa	Engine, thresher, saw mill, etc.
Deiser Co	
Kitselman Bros., Ridgeville, Ind	Fence exhibit.
Jones National Fence Co., Columbus, O	Fence exhibit.
Kokomo Fence Co., Kokomo, Ind	Fence machine and display.
Keystone Manufacturing Co., Sterling, O	Corn huskers, shredders, etc.
DeGraff Manufacturing Co., Amanda, O	Grain cleaners and separators.
Coquilliard Wagon Co., South Bend, Ind	Wagons.

Milwaukee Hay Tool Co., Milwaukee, Wis	Engine, corn husker and shredder
Marion Manufacturing Co., Marion, O	Engine and separator.
Milburn Wagon Co., Toledo, O.	Wagons and buggies.
Norwalk Lock Stay Fence Co., Norwalk, O	Fence exhibit.
Lima Locomotive Machine Co., Lima, O	Engine and hay press.
Ohio Rake Co., Dayton, O	Hay loaders, tedders, harrows, etc.
Orrville Machine Co., Orrville, O	Engine and separator.
Roderick Lean Manufacturing Co., Mansfield, O	Harrows.
J. A. King, Amanda, O	Fanning mills.
Ohio Cultivator Co., Bellevue, O	Cultivators, rollers, harrows, etc.
Spiral Wire Fence Co	Fence exhibit.
Reeves Co., Columbus, Ind	Engine and thresher.
Russell & Co., Massillon, O	Engine, separator and stacker.
The E. W. Ross Co., Springfield, O	Feed cutter, circular saws, etc.
F. D. Prouty Co., Columbus, O	Hay presses.
Riddle Fence Co., Derby, O	Fence exhibit.
Ohlen Saw Co., Columbus, O.	Saws, mill supplies.
Studebaker Bros. Mfg. Co., South Bend, Ind	Buggies and wagons.
Smalley Mfg. Co., Manatowoc, Wis	Feed cutter and horse power.
South Bend Chilled Plow Co., South Bend, Ind.	Plows and cultivators.
Sandwich Mfg. Co., Sandwich, Ill	Engine, hay presses and shellers.
Star Mfg. Co., New Lexington, O	Engine, mills, cookers, etc.
Shudler Machine Co., Newark, O	Engine.
Carter Wire Fence Mach. Co., Mt. Sterling, O.	Fence machine.
Schinner Fence Co., Anderson, Ind	Fence display.
J. W. Schall, Logan, O	Wire fence stretcher.
Wonder Churn Co., Dayton, O	Churns.
E. A. Shoemaker, 542 Park st., Columbus, O	Paints and boiler cleaner.
The Vermont Farm Mach. Co., Bellows Falls, Vt.	Cream separators, churns, etc.
F. M. Wilson, Selma, O	Dairy fixtures.
Woodcock Foundry Co., Chillicothe, O	Feed mill.
Whitman Agl. Co., St. Louis, Mo	Powers, shellers and grinders.
Logan Grain Separator Co., Logan, O	Fanning mills.
I. K. Miller, Columbus, O	Tie machine.
Lancaster Wagon Comb. Bed., Lancaster, O	Wagon beds and stock racks.
Wilson Wire Fence Co., Holly, Mich	Fence exhibit.
Perkins Windmill Co., Misawaka, Ind	Wind mills.
S. S. Saunders Fence Co	Fence stretcher.
Union Corn Planter Co., Peoria, Ill.	Planters.
Hench & Drongold, York, Pa	Harrows, cultivators, drills, etc.
Page Fence Co., Adrian, Mich	Buffalo, elk, bear.
J. E. Bogs, Peru, Ill	Fence exhibit.
South Bend Iron Works, South Bend, Ind	Plows, etc.
Keystone Farm Mach. Co., York, Pa	Weeders, cultivators, drills, etc.
Hoover, Prout & Co., Avery, O	Potato digger.
Cast Steel Plow Co	Farm machinery.
I. W. Stowe, Columbus, O	Wash machines.
Chicago Iron Co., Chicago, Ill	Chicago scale.
Bucannan Fence Co	Fence exhibit.
W. H. Bothy & Son, Cincinnati, O	Hot air pumping engine.
Brown, Manly & Co., Malta, O	Agricultural implements.
J. B. Foot & Co., Fredericktown, O	Harness riveting machine.
Jas. M. Sears & Co., Salem, O.	I. X. L. harness menders.

A. T. Stewart & Co., Pittsburgh, Pa	Plows, pumps and sprayers.
Brewer Cider Co., Bloomington, Ill	Hydraulic cider press.
Moline Plow Co., Moline, Ill	Plows, cultivators, etc.
Avery Planter Co, Peoria, Ill	Corn planters and cultivators.
L. S. Brown, Columbus, O	Bicycle pump
Wayne Works, Richmond, Ind	Wagons, carts, drills and planters.
Schauk & Owen, Delaware, O	Fence exhibit.
Deere & Mauser Co., Moline, Ill	Agricultural implements.
Chain Stay Fence Co., Tontogany, O	Fence exhibit.
P. P. Mast & Co, Springfield, O	Grain drills, cultivators, etc.
Parlin & Orendorff Co., Canton, Ill	
Superior Drill Co., Springfield, O	Grain drills and hay tools.
Eureka Mower Co., Utica, N. Y	Mowers, harvesters, etc.
McSherry Mfg. Co., Middletown, O	Drills, harrows, etc.
Brown Manufacturing Co., Zanesville, O	Wagons, plows and harrows.
D. M. Osborne & Co, Columbus, O	Binders, mowers, rakes and harrows.
Rock Plaster Mfg. Co., Columbus, O	Rock plaster.
Whitely Reaper Co., Springfield, O	Binder, mower and bicycles.
Champion Wagon Co., Owego, N. Y	Wagons and grain drills.
Bucyrus Gate Co, Bucyrus, O	Farm gate.
Wm. Saighman, Kansas City, Mo	Feeders.
Chase Pump Mfg. Co. Columbus, O	Full line pumps.
J. R. Knighton, Chicago, Ill	Fertilizers and meats.
The Thomas Mfg. Co., Springfield, O	Farm machinery.
The Akron Cultivator Co., Akron, O	Cultivators.
Bucher Gibbs Plow Co., Canton, O	Plows, harrows and cultivators.
F. E. Myers & Bro., Ashland, O	Pumps and hay carriers.
Novelty Kettle Co., Athens, O	Kettles.
D. H. Sechler, Moline, Ill	Black Hawk corn planter.
Stoddard Mfg. Co., Dayton, O	Drills, rakes, harrows, etc.
J. M. Black (Shink Plow Co,), Bucyrus, O	Plows and wagons.
Little Grant Spoke and Tire Co., Cincinnati, O	Spokes and tires.
Rippley Hardware Co., Grafton, Ill	Feed cookers.
Powers & Fustenfield, St. Louis, Mo	Automatic wagon brake.
Rock Island Plow Co., Rock Island, Ill	Plows, cultivators and harrows.
Long & Allstatter Co., Hamilton, O	Cultivators, harrows and plows.
Deere & Co., Moline, Ill	Cultivators, plows and harrows.
Flint & Walling Co., Kendallville, Ind	Wind mills, pumps and tanks.
Smith & Pomeroy, Kalamazoo, Mich	Wind mill, pumps and tanks.
Walter A. Wood & Co., Hoosick Falls, N. Y	Binder and mower.
J. F. Seiberling & Co., Akron, O	Binder, mower and reaper.
Hoosier Drill Co., Richmond, Ind	Drills and corn planters.
J. P Perry, Columbus, O	Hand knife.
The H. P. Deuscher Co., Hamilton, O	Planters, drills and harrows.
Princess Plow Co, Canton, O	Plows, harrows and rollers.
Marcy Mfg. Co., Bluffton, Ind	Wind mills, pumps and tanks.
Mast, Foos & Co, Springfield, O	Wind mills, pumps, grinders, etc.
Little King Churn Co., Columbus, O	Churns.
Warren Evaporator Works, Warren, O	Maple syrup evaporator.
Troy Wagon Co., Troy, N. Y	Wagons.
South Bend Iron Co., South Bend, Ind	Plows.
Berry Mfg. Co., Upper Sandusky, O	Feed mills.
Johnston Harvester Co., Batavia, N. Y	Corn binder.

MECHANICS' AND MANUFACTURERS' PRODUCTS.

E. C. ELLIS—Member in Charge.

The Radiant Home Stove Co., Erie, Pa.	Heating stoves.
The Michigan Stove Co., Detroit, Mich.	The Garland heaters, cooking stoves and ranges.
C. S. Bradley & Co., Columbus, O	Ranges, heating and cooking stoves.
The Champion Steel Range Co., Cleveland, O.	Steel ranges and heaters.
George R. Moon, Prop., Columbus, O.	Sheet iron baking ovens for gas, oil, or gasoline stoves.
Yardly, Marsh & Co., Columbus, O.	Bicycles, furnishings and sporting goods, also household supplies.
American Art and Tile Co., Upper Sandusky, O.	Art and decorating tile.
The Columbus Brass and Closet Co., Columbus, O	The latest styles in sanitary plumbing and brass finishings.
The James Ohlen's Sons, Columbus, O.	All kinds of circular and cross-cut saws, etc.
D. L. Long, Columbus, O.	A patent fastener for windows.
Walmsley & Co., 734 Marquette Bldg. Chicago, Ill.	Acetylene machine and burner for illuminating purposes.
Schoedinger, Fearne & Co., Columbus, O.	Heating and cooking stoves, ranges and kitchen supplies.
J. C Sherwood & Co., Columbus, O.	Bicycles, supplies and sporting goods.
Rich, Munk & Co., Columbus, O.	Stoves, ranges, kitchen and dining room outfits complete.
Blockwood, Green & Co., Columbus, O.	Heating and cooking stoves, steel ranges and kitchen supplies.
J. H. and F. A. Sells, Columbus, O.	Harness of all sizes and kinds, saddles, robes and blankets.
M. Hertenstein & Co., Columbus, O.	Stoves, heating, cooking and ranges.
Thos. Roderick & Co., Columbus, O.	The Allen patent for natural gas appliances.
The Vehicle Co., Columbus, O	Fancy single and double seated traps, etc.
John Immel & Son, Columbus, O.	Fine heavy and light delivery wagons, buggies and carriages.
The Buckeye Buggy Co., Columbus, O.	Fine buggies, phaetons, surries, depot wagons, etc.
The Climax Buggy Co., Columbus, O.	Buggies, phaetons and surries.
The Peabody Carriage Co., Fostoria, O	Buggies and surries.
The Wagon Sulkyette and R. C. Co., Decatur, Ill.	Pony phaetons and double seated road carts.
Warren & Southwick, Columbus, O.	Fine, new style, light and heavy delivery wagons.
The Columbus Carriage Co., Columbus, O.	Buggies, surries, phaetons and carriages.
The Westcott Carriage Co., Richmond, Ind.	Buggies, surries, phaetons, and carriages.
W. A. Patterson, Flint, Mich.	Buggies, surries and phaetons.

Central Ohio Buggy Co., Galion, O	Buggies, phaetons, etc.
The Richland Buggy Co., Mansfield, O	Phaetons and surries.
A. A. Howard, Galion, O	Buggies, phaetons and surries.
The Galion Buggy Co., Galion, O	Buggies, surries and phaetons.
The Bimel Carriage Co., Sidney, O	Buggies, carriages and phaetons.
The Zimmerman Mfg. Co., Auburn, Ind	Buggies, phaetons, surries, etc.
The Piqua Wagon and Buggy Co., Piqua, O	Light wagons, buggies and phaetons.
The National Wagon Co., Marion, O	Buggies with new device cut under for short turning.

MERCHANDISE, MUSIC, ETC.

E. C. ELLIS—Member in Charge.

Capital City Dairy Co., Columbus, O	Butterine.
McAllister, Mohler & Co., Columbus, O	Furniture, mattresses and pillows.
Wiseman and Lilley, Columbus, O	Dress goods, corsets and wraps.
American Machine Co., Columbus, O	Standard grade bicycles, lamps, tools, etc.
Bott Bros., Columbus, O	Bars, billiard tables, balls, cues, etc.
Monneypenny-Hammond Co., Columbus, O	Food exhibit.
Rumford Baking Powder Co., Providence, R. I.	Baking powder and Hosford acid phosphate.
F. L. Martin, Milwaukee, Wis	Tanned skins and hides.
Monarch Starch Co., Columbus, O	Starch of all kinds.
Cherrington Ptg. and Eng. Co., Columbus, O	Seals, rubber stamps, etc.
National Cash Register Co., Dayton, O.	Cash registers.
Buckeye Paste Co , Columbus, O	All kinds of paste.
Columbus Pharmacal Co., Columbus, O	Invalid chairs, trusses, etc.
J. C. Willing, Columbus, O	Tinware novelties.
Henry Goldsmith, Columbus, O	Violins, guitars, etc.
Brunswick Cigar Mfg. Co , Columbus, O	Cigar makers at work.
A. E. Pitts, Columbus, O	Ladies' and children's shoes.
Hallwood Cash Register Co., Columbus, O	Cash registers.
Gold Mine Store, Columbus, O	Dress goods, cloaks, hats, etc.
Columbus Paint Co., Columbus, O	Paints, varnish, etc.
McCormick Picture Co., Columbus, O	Pictures, frames, etc.
Puntenney, Eusler & Co , Columbus, O	Pianos.
McCray Refrigerator and Cold Storage Co., Kendallville, Ind	Refrigerators.
Price Manufacturing Co., Gnadenhutten, O	Buckeye acetylene gas generator.
The MacIntosh-Lee Co , Buffalo, N. Y	Health cap for milk bottles.
Cyclone Camera Co., Chicago, Ill.	Cyclone cameras.
Kirby & Co., Columbus, O	Ten cent goods.
Max Reiser, Columbus, O	Jewelry of all kinds.
Frank H. Lattin, Albion, N. Y	Shells, minerals, etc.
K. B. Mathers, Omaha, Neb	Shells and jewelry.
J. H. Goodwin, Jacksonville, Fla	Shells and jewelry.
M. W. Westlake, Columbus, O	Glass engraver.
J. I. Goldsmith, Columbus, O	Embroidering machine.
Columbus Optical Co., Columbus, O	Spectacles of all kinds.
H. Grabowski, Columbus, O	Spectacles and jewelry.
J. I. Hiler, Columbus, O	Pianos and sheet music.
R. McFarland, M. D., Columbus, O	Samples of capsules.

ABSTRACTS FROM REPORTS OF COUNTY AGRICULTURAL SOCIETIES FOR 1898.

TABLE I—COUNTY FAIRS IN OHIO FOR 1898.

County.	President.	Postoffice.	Treasurer.	Postoffice.
Adams	W. K. Coleman	West Union	Henry Scott	West Union.
Allen	Abraham Harrod	Lima	E. W. Enslen	Elida.
Ashtabula	H. H. Poole	Conneaut	C. L. Taylor	Jefferson.
Athens	N. W. Baker	Chauncey	W. Scott	Athens.
Auglaize	J. T. Van Horn	New Hampshire	Frank Rigdon	Wapakoneta.
Belmont	A. C. Darrah	St. Clairsville	E. G. Amos	St. Clairsville.
Brown	V. K. Thompson	Georgetown	Ben. B. Whiteman	Georgetown.
Butler	J. A. Slade	Hamilton	L. M. Larsh	Hamilton.
Carroll	Wm. L. Smeltz, Jr	Carrollton	Thos. J. Saltsman	Carrollton.
Champaign	C. H. Ganson	Urbana	H. P. Wilson	Urbana.
Clark	T. L. Calvert	Selma	Geo. C. Agle	Plattsburg.
Clermont	John P. Friend	Perintown	J. O. Rapp	Owensville.
Columbiana	Lee Deemer	Lisbon	B. N. Brown	Gavers.
Coshocton	Ed. M. Hanlon	Coshocton	Corwin McCoy	Coshocton.
Crawford	J. A. McMichael	Bucyrus	Michael Auck	Bucyrus.
Cuyahoga	L. R. Dunham	Bedford	W. E. Rodgers	Chagrin Falls.
West Cuyahoga	L. M. Coe	Berea	W. J. Poots	Strongsville.
Darke	Jacob M. Brown	De Lisle	Edward Ammon	Gordon.
Erie	Chas. W. Taylor	Sandusky	F. P. Zollinger	Sandusky.
Fairfield	Dan'l Crumley	Lancaster	C. B. Whiley	Lancaster.
Fayette	Nye Gregg	Washington C. H	O. S. Mallow	Washington C. H.
Fulton	L. G. Ely	Fayette	W. A. Blake	Wauseon.
Geauga	E. L. Strong	Huntsburg	H. C. Tuttle	Burton.
Greene	Jno. B. Lucas	Xenia	T. L. Magruder	Xenia.
Guernsey	A. J. Clark	Cambridge	R. S. Frame	Washington.
Hamilton	E. C. Ellis	Crestvue	E. H. Huffman	Sharonville.
Hancock	W. A. Williamson	Mt. Cory	Geo. P. Jones	Findlay.
Hardin	W. F. Hufford	Ada	Horton Park	Kenton.
Harrison	C. R. Tipton	Cadiz	S. R. Hamilton	Cadiz.
Hocking	Geo. H. Shaw	Logan	James Kimberling	Logan.
Holmes	J. W. Johnson	Paint Valley	W. G. Rudy	Millersburg.

COUNTY FAIRS IN OHIO FOR 1898 — Continued.

County.	President.	Postoffice.	Treasurer.	Postoffice.
Jefferson	I. S. Vale	Smithfield	Chas. McKinney	Smithfield.
Lawrence	J. P. Eaton	La Belle	C. J. Reynolds	Proctorville.
Licking	B. N. Sigler	Homer	A. J. Crilly	Newark.
Logan	David Fuson	Logansville	C. L. Rogers	Degraff.
Lorain	J. L. Reed	N. Ridgeville	J. E. Willard	Elyria.
Madison	Chas. A. Wilson	Summerford	M. L. Rea	London.
Mahoning	North Newton	Boardman	S. A. Fogg	Canfield.
Marion	W. F. Hurr	Martel	D. M. Odaffer	Marion.
Medina	E. S. Bissell	Le Roy	Blake Hendrickson	Medina.
Meigs	P. B. Stanbery	Pomeroy	John McQuigg	Pomeroy.
Mercer	S. H. Weaver	Early	J. M. Winter	Celina.
Miami	T. S. Scott	Troy	D. M. Cappock	Pleasant Hill.
Monroe	W. C. Mooney	Woodsfield	W. C. Mooney	Woodsfield.
Montgomery	J. McLain Smith	Dayton	Samuel Wampler	Dayton.
Morgan	John G. Walker	McConnelsville	J. W. McElhiney	McConnelsville.
Morrow	C. D. Russell	Mt. Gilead	J. G. Russell	Mt. Gilead.
Muskingum	S. A. Baldwin	Zanesville	J. E. Tanner	Zanesville.
Noble	W. S. Spriggs	Sarahsville	C. L. Hellyer	Sarahsville.
Ottawa	John Orth	Port Clinton	Fred Camper	Gypsum.
Paulding	J. L. Slager	Paulding	W. B. Jackson	Paulding.
Perry	T. J. Tracy	New Lexington	Patrick Coyle	New Lexington.
Portage	C. R. Doolittle	Streetsboro	C. H. Lambert	Ravenna.
Preble	J. C. Anderson	Camden	C. F. Brook, Jr	Eaton.
Putnam	A. L. Paul	Ottawa	C. H. Rice	Ottawa.
Richland	Jerry Needham	Lexington	John Hale	Pavonia.
Ross	Clark W. Story	Chillicothe	Theodore Spetnagel	Chillicothe.
Sandusky	W. J. Smith	Fremont	Wm. Gabel	Fremont.
Shelby	E. W. Stowell	Sidney	W. E. Lierman	Sidney.
Stark	C. M. Welty	North Industry	H. A. Wise	Canton.
Summit	M. L. Sprankle	Bath	Geo. W. Brewster	Akron.
Trumbull	S. F. Bartlett	Warren	O. D. Morgan	Warren.

Tuscarawas	J. F. Kennedy	New Philadelphia	V. Wentz	Canal Dover.
Union	Thos. P. Shields	Watkins	C. S. Chapman	Marysville.
Van Wert	J. S. Stuckey	Van Wert	E. B. Gilliland	Van Wert.
Warren	Huse Bone	Lebanon	F. M. Cunningham	Lebanon.
Washington	Ed. Flanders	Marietta	J. H. McConnell	Marietta.
Wayne	E. G. Ebright	Shreve	W. A. Wilson	Wooster.
Wood	F. Powell	Perrysburg	E. B. Beverstock	Tontogany.
Wyandot	E. R. Larcomb	Upper Sandusky	Henry Kear	Upper Sandusky.

COUNTY FAIRS IN OHIO FOR 1898, WITH TIME AND PLACE.

County.	Secretary.	Postoffice.	Time of fair.	Place of fair.
Adams	T. W. Ellison	West Union	September 13, 14, 15 and 16.	West Union.
Allen	T. B. Bowersock	Lima.	September 27, 28, 29 and 30.	Lima.
Ashtabula	Chas. C. Babcock	Jefferson	September 20, 21, 22 and 23.	Jefferson.
Athens	C. S. McDougal	Hixson	August 23, 24 and 25	Athens.
Auglaize	A. E. Schaffer	Wapakoneta	September 6, 7, 8 and 9	Wapakoneta.
Belmont	T. C. Ayres	St. Clairsville	August 30 and 31, and September 1	St. Clairsville.
Brown	J. W. Hedrick	Russellville	October 4, 5, 6 and 7	Georgetown.
Butler	W. C. Hunter	Hamilton	October 3, 4, 5, 6 and 7	Hamilton.
Carroll	C. A. Tope	Carrollton	September 28, 29 and 30	Carrollton.
Champaign	J. W. Crowl	Urbana	August 16, 17, 18 and 19	Urbana.
Clark	Wm. Jenkins	Seth	August 23, 24, 25 and 26	Springfield.
Clermont	John Rowan	Blowville	August 22, 23, 24, 25 and 26	Boston Ow'nsv'le P.O.
Columbiana	E. F. Moore	Lisbon	September 13, 14 and 15.	Lisbon.
Coshocton	Robert Boyd	Coshocton	October 11, 12, 13 and 14	Coshocton.
Crawford	B. Beal	Bucyrus	September 20, 21, 22 and 23	Bucyrus.
Cuyahoga	Geo. B. Huggett	Chagrin Falls	September 13, 14, 15 and 16.	Chagrin Falls.
West Cuyahoga	C. H. Busby	Berea	September 20, 21, 22 and 23.	Berea.
Darke	T. C. Maher	Greenville	August 22, 23, 24, 25 and 26.	Greenville.
Erie	John T. Mack	Sandusky	September 27, 28, 29 and 30.	Sandusky.
Fairfield	W. T. McClenaghan	Lancaster	October 12, 13, 14 and 15	Lancaster.
Fayette	N. B. Hall	Washington C. H.	August 16, 17, 18, 19 and 20	Washington C. H.
Fulton	Thos. Mikesell	Wauseon	September 27, 28, 29 and 30.	Wauseon.
Geauga	P. W. Parmelee	Burton	September 6, 7, 8 and 9	Burton.
Greene	R. R. Grieve	Xenia	August 9, 10, 11 and 12	Xenia.
Guernsey	J. W. Moore	Washington	September 27, 28, 29 and 30	Washington.
Hamilton	D. L. Sampson	Cincin'ati, 340 Main st	August 16, 17, 18 and 19	Carthage.
Hancock	M. C. Greer	Mt. Blanchard	October 12, 13, 14 and 15	Findlay.
Hardin	F. H. Rummell	Kenton	September 13, 14, 15 and 16	Kenton.
Harrison	J. G. Millikin	Cadiz	October 5, 6 and 7	Cadiz.
Hocking	C. W. Cox	Logan		
Holmes	G. F. Gilbert	Millersburg		Millersburg.
Jefferson	J. O. Hayne	Smithfield	September 28, 29 and 30	Smithfield.
Lawrence	W. W. Reckard	Proctorville	September 7, 8 and 9	Proctorville.

Licking	Ad. C. Seymour	Newark	August 23, 24, 25 and 26	Newark.
Logan	E. Pat. Chamberlin	Bellefontaine	October 4, 5, 6 and 7	Bellefontaine.
Lorain	W. B. Johnston	Elyria	September 13, 14, 15 and 16.	Elyria.
Madison	E. B. Pancake.	London	September 6, 7, 8 and 9	London.
Mahoning	B. Manchester	Hickory	September 27, 28 and 29.	Canfield.
Marion	J. E. Waddell	Marion	September 27, 28, 29 and 30.	Marion.
Medina	Hiram Goodwin	Medina	September 6, 7, and 8	Medina.
Meigs	H. C. Fish	Pomeroy	September 7, 8 and 9	Rock Springs.
Mercer	C. W. Halfhill	Mercer	August 16, 17, 18 and 19	Celina.
Miami	W. I. Tenney	Troy	September 26, 27, 28, 29 and 30.	Troy.
Monroe	Geo. P. Dorr	Woodsfield	August 30, 31, September 1 and 2.	Woodsfield.
Montgomery	W. J. Ferguson	Dayton	October 4, 5, 6 and 7	Dayton.
Morgan	M. E. Danford	McConnelsville	September 6, 7 and 8	McConnelsville.
Morrow	O. J. Miller	Mt. Gilead	October 4, 5, 6 and 7	Mt. Gilead.
Muskingum	J. D. Mercer	Zanesville	September 6, 7, 8 and 9	Zanesville.
Noble	Arthur McWilliams	Sarahsville	September 28, 29 and 30	Sarahsville.
Ottawa	T. S. Johnson	Gypsum	September 7, 8 and 9	Port Clinton.
Paulding	F. M. Bashore	Paulding	September 6, 7, 8 and 9.	Paulding.
Perry	Chas. C. Chappelear.	New Lexington	September 13, 14, 15 and 16.	New Lexington.
Portage	Lafayette Smith	Ravenna	September 20, 21, 22 and 23.	Ravenna.
Preble	Henry H. Farr	Eaton	September 26, 27, 28, 29 and 30.	Eaton.
Putnam	A. P. Sandles	Ottawa	October 4, 5, 6, 7 and 8	Ottawa.
Richland	W. H. Gifford	Mansfield		
Ross	Wm. L. Tulleys	Chillicothe	August 9, 10, 11 and 12	Chillicothe.
Sandusky	J. C. Overmeyer	Fremont	October 4, 5, 6 and 7	Fremont.
Shelby	J. E. Russell	Sidney	September 20, 21, 22 and 23.	Sidney.
Stark	J. H. Lehman	Canton	September 27, 28, 29 and 30.	Canton.
Summit	Albert Hale	Akron	October 4, 5, 6 and 7	Akron.
Trumbull	Jas. L. Kennedy	Warren	September 13, 14 and 15	Warren.
Tuscarawas	H. W. Streb	Canal Dover	September 20, 21, 22 and 23.	Canal Dover.
Union	E. W. Porter	Marysville	October 4, 5, 6 and 7	Marysville.
Van Wert	O. D. Swartout.	Van Wert	September 13, 14, 15 and 16.	Van Wert.
Warren	Geo. W. Carey.	Lebanon	September 20, 21, 22 and 23.	Lebanon.
Washington	Henry G. Bohl	Marietta	September 13, 14, 15 and 16.	Marietta.
Wayne	I. N. Kinney	Wooster	September 27, 28, 29 and 30.	Wooster.
Wood	J. O. Avery	Weston		
Wyandot	Oscar Billhardt	Upper Sandusky	October 4, 5, 6 and 7	Upper Sandusky.

TABLE II — CATTLE.

Counties.	Short Horns.			Devons.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	8	$44 00	$38 00	5	$44 00	$28 00
Allen	18	70 50	51 30	27	70 50	60 75
Ashtabula	16	52 00	34 00	10	52 00	28 00
Athens	18	50 00	37 00		50 00	
Auglaize				12	61 50	41 00
Belmont		31 00			31 00	
Brown	21	60 00	55 00			
Butler	10	79 00	47 00			
Carroll	29	66 00	55 00			
Champaign	17	76 00	66 00	16	76 00	64 00
Clark		70 00		12	70 00	56 00
Clermont	20	73 00	68 00			
Columbiana	11	57 00	36 00			
Coshocton	17	88 00	71 50		88 00	
Crawford	11	48 00				
East Cuyahoga	10	35 50	20 50	9	35 50	21 00
West Cuyahoga	16	51 25	32 75			
Erie						
Fairfield	11	90 00	65 00			
Fulton	16	63 00	42 00			
Geauga	35	41 00	31 00	20	41 00	31 00
Greene				12	82 00	66 00
Guernsey	1	66 00	6 00	10	66 00	34 00
Hamilton	43	100 00	90 00			
Hancock	22	66 00	48 00	30	66 00	35 00
Hardin						
Harrison	*36	50 00	37 00	‡		
Jefferson	3	46 00	15 00		46 00	
Lawrence	8	44 00	23 00			
Licking	13	87 00	71 00	11	70 00	58 00
Logan	†9	69 00	48 00			
Lorain	10	67 50	40 00			
Madison	13	69 00	53 50			
Mahoning	18	83 00	50 00			
Marion	12	55 00	45 00			
Medina	1	36 00	2 00			
Meigs	12	60 00	34 00			
Mercer	3	77 00	13 00	26	77 00	63 00
Miami	1	72 00	12 00	13	72 00	38 00
Monroe	5	46 00	22 00		46 00	
Montgomery				23	72 50	66 50
Morrow	25	36 00	28 00			
Muskingum	16	85 00	73 00	18	85 00	63 00
Noble						
Ottawa						
Paulding	21	117 00	42 50	12	65 00	24 00
Perry	10	36 50	23 00	11	36 50	21 50

*Includes Devons and Herefords.
†Includes Herefords.
‡Included in Short Horns.

TABLE II — CATTLE — Continued.

Counties.	Short Horns.			Devons.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount offered.
Portage	3	42 00	8 00	9	42 00	24 00
Preble	9	82 00	52 00	*12	82 00	65 00
Putnam	....	98 00	....	18	98 00	84 00
Ross	......	56 00	....	......	....	....
Sandusky	28	97 00	78 00	......	....	....
Stark	26	180 00	108 00	......	....	....
Summit	16	80 00	67 00	......	....	....
Trumbull	26	73 00	68 00	......	....	....
Tuscarawas	16	56 00	53 00	......	....	....
Union	22	46 00	39 00	......	....	....
Van Wert	22	86 00	75 00	13	86 00	75 00
Warren	7	49 00	21 00	......	43 00	....
Washington	8	40 00	20 50	6	40 00	16 00
Wayne	5	52 00	17 50	....	....	....
Wood	12	62 00	45 00	10	62 00	40 00
Wyandot	......	65 00	....	.....	....	....
Totals	766	$3,677 25	$2,178 55	345	$1,856 50	$1,102 75

* Includes Jerseys.

TABLE II — CATTLE — Continued.

Counties.	All Polled Breeds.			Herefords.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	......	......	......	4	$44 00	$19 00
Allen	72	$211 50	$140 40	......	......	......
Ashtabula	13	104 00	39 00	......	......	......
Athens	1	50 00	6 00	1	50 00	6 00
Auglaize	63	184 50	168 00	10	61 50	45 50
Belmont	......	31 00	......	......	31 00	......
Brown	11	60 00	50 00	6	60 00	20 00
Butler	12	81 00	63 00	......	77 00	......
Carroll	10	50 00	36 00	......	......	......
Champaign	1	152 00	......	......	......	......
Clark	34	280 00	114 00	......	70 00	......
Clermont	......	......	......	......	......	......
Columbiana	......	57 00	......	......	......	......
Coshocton	24	88 00	73 50	20	88 00	69 50
Crawford	6	48 00	......	......	......	......
East Cuyahoga	......	......	......	......	......	......
West Cuyahoga	26	102 50	70 75	11	51 25	33 25
Erie	......	......	......	......	......	......
Fairfield	1	90 00	5 00	......	......	......
Fulton	22	126 00	84 50	13	63 00	39 00
Geauga	......	82 00	......	......	41 00	......
Greene	23	164 00	121 00	......	......	......
Guernsey	18	66 00	49 00	3	66 00	17 00
Hamilton	35	200 00	171 00	18	100 00	90 00
Hancock	28	132 00	89 00	26	66 00	35 00
Hardin	......	......	......	12	75 00	40 00
Harrison	20	41 00	36 00	‡	......	......
Jefferson	......	......	......	......	46 00	......
Lawrence	......	......	......	......	......	......
Licking	......	75 00	......	4	75 00	17 00
Logan	10	69 00	38 00	‡	......	......
Lorain	14	67 50	49 50	14	67 50	51 50
Madison	19	138 00	57 50	......	......	......
Mahoning	......	......	......	13	83 00	51 00
Marion	2	55 00	14 00	4	55 00	14 00
Medina	......	......	......	......	......	......
Meigs	......	......	......	......	......	......
Mercer	38	231 00	186 00	......	......	......
Miami	18	144 00	49 00	5	72 00	21 00
Monroe	3	46 00	12 00	......	......	......
Montgomery	......	......	......	......	......	......
Morrow	8	108 00	28 00	5	36 00	20 00
Muskingum	33	170 00	117 25	......	85 00	......
Noble	......	......	......	......	......	......
Ottawa	......	......	......	......	......	......
Paulding	11	85 00	28 50	......	117 00	......
Perry	5	36 50	12 50	......	......	......
Portage	11	42 00	28 00	......	......	......
Preble	13	164 00	65 00	......	82 00	......

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‡ Included in Short Horns.

TABLE II — CATTLE — Continued.

Counties	All Polled Breeds.			Herefords.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Putnam	21	98 00	88 00	......	98 00	....
Ross	10	112 00	40 00	......	56 00	....
Sandusky	23	95 00	75 00	9	96 00	43 00
Stark	13	180 00	63 00	......	90 00	....
Summit	16	160 00	76 00	12	80 00	54 00
Trumbull	11	73 00	52 00	10	73 00	42 00
Tuscarawas	......	....	....	......	....	....
Union	25	92 00	55 00	......	....	....
Van Wert	43	162 00	67 00	......	....	....
Warren	12	43 00	32 00	......	....	....
Washington	11	59 00	19 00	*24	60 50	37 50
Wayne	......	52 00	....	......	52 00	....
Wood	34	186 00	129 00	......	62 00	....
Wyandot	......	65 00	....	......	....	....
Totals	824	$5,208 50	$2,697 40	224	$2,329 75	$765 25

*Includes Jerseys and Ayrshires.

TABLE II — CATTLE — Continued.

Counties.	Jerseys.			Holsteins.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	11	$44 00	$40 00	......	$44 00	....
Allen	55	70 50	63 45	29	70 50	$57 15
Ashtabula	31	52 00	52 00	19	52 00	41 00
Athens	4	50 00	13 00	9	50 00	26 00
Auglaize	26	61 50	54 50	20	61 50	39 00
Belmont	6	31 00	10 50	......	31 00	....
Brown	30	60 00	60 00	......	....	....
Butler	30	77 00	77 00	17	77 00	77 00
Carroll	19	50 00	40 00	11	50 00	38 00
Champaign	69	76 00	73 00	19	81 00	66 00
Clark	23	70 00	59 00	12	70 00	43 00
Clermont	22	73 00	65 00	.....	....	....
Columbiana	......	57 00	....	14	57 00	50 00
Coshocton	51	88 00	85 50	36	88 00	88 00
Crawford	3	48 00	....	......	....	....
East Cuyahoga	16	35 50	32 00	20	35 50	29 50
West Cuyahoga	23	51 25	46 75	15	51 25	38 00
Erie	13	54 00	36 75	17	54 00	47 50
Fairfield	27	90 00	82 00	......	....	....
Fulton	29	63 00	58 00	13	63 00	46 50
Geauga	46	41 00	36 00	62	41 00	41 00
Greene	51	164 00	153 00	......	....	....
Guernsey	12	66 00	47 00	3	66 00	12 00
Hamilton	20	100 00	96 00	20	100 00	94 00
Hancock	29	66 00	58 00	20	66 00	56 00
Hardin	24	75 00	64 00	12	75 00	30 00
Harrison	*12	34 00	28 00	†	....	....
Jefferson	22	46 00	46 00	......	46 00	....
Lawrence	16	44 00	32 00	......	44 00	....
Licking	31	75 00	62 00	......	33 00	....
Logan	28	69 00	64 00	......	....	....
Lorain	3	67 50	13 00	17	67 50	58 50
Madison	13	69 00	59 50	10	69 00	37 50
Mahoning	21	83 00	65 50	24	83 00	61 50
Marion	16	55 00	40 00	1	55 00	6 00
Medina	29	52 00	43 50	13	29 50	22 50
Meigs	1	13 00	8 00	......	....	....
Mercer	19	77 00	71 00	13	77 00	57 00
Miami	18	72 00	65 00	13	72 00	45 00
Monroe	13	46 00	26 00	3	46 00	14 00
Montgomery	22	72 50	67 00	13	72 50	54 50
Morrow	6	36 00	16 00	12	36 00	32 00
Muskingum	19	85 00	58 00	......	85 00	....
Noble	.....	....	....	......	....	....
Ottawa	3	....	....	......	....	....
Paulding	14	53 00	30 75	29	115 00	66 00
Perry	1	36 50	4 00	......	....	....
Portage	5	42 00	26 50	10	42 00	29 00
Preble	see	Devons	....	13	82 00	70 00

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*Includes Holsteins and Ayrshires.
†Included in Jerseys.

TABLE II — CATTLE — Continued.

Counties.	Jerseys.			Holsteins.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Putnam	17	98 00	80 00	9	98 00	60 00
Ross	.....	56 00	....	12	56 00	45 00
Sandusky	29	105 00	94 00	20	96 00	68 00
Stark	36	90 00	79 00	20	90 00	71 00
Summit	31	80 00	67 50	34	80 00	63 00
Trumbull	22	73 00	67 00	21	73 00	54 00
Tuscarawas	......	....	....	......	....	....
Union	39	46 00	40 00	11	46 00	32 00
Van Wert	23	86 00	74 00	27	86 00	82 00
Warren	13	46 00	37 00	....	....	....
Washington	†	....	....	10	40 00	22 00
Wayne	1	52 00	3 00	12	52 00	40 50
Wood	*16	62 00	42 00	16	62 00	42 00
Wyandot	12	65 00	35 00	5	65 00	25 00
Totals	1,221	$3,701 25	$2,846 70	736	$3,182 25	$2,077 65

* Includes Guernseys.
† Included in Herefords

TABLE II—CATTLE.

Counties.	Ayrshires.			Guernseys.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams						
Allen						
Ashtabula	14	$52 00	$42 00			
Athens						
Auglaize						
Belmont					$31 00	
Brown						
Butler						
Carroll						
Champaign						
Clark		70 00				
Clermont						
Columbiana						
Coshocton						
Crawford						
East Cuyahoga	13	35 50	28 00			
West Cuyahoga	12	51 25	40 50			
Erie	11	54 00	48 00			
Fairfield						
Fulton		63 00				
Geauga	34	41 00	40 00			
Greene						
Guernsey						
Hamilton						
Hancock						
Hardin				10	40 00	$36 00
Harrison	*					
Jefferson						
Lawrence						
Licking						
Logan						
Lorain	17	67 50	59 50			
Madison						
Mahoning						
Marion						
Medina	8	36 00	20 50			
Meigs						
Mercer						
Miami					72 00	
Monroe						
Montgomery						
Morrow						
Muskingum						
Noble						
Ottawa						
Paulding						
Perry						
Portage	6	42 00	17 50			

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* Included in Jerseys.

TABLE II — CATTLE — Continued.

Counties.	Ayrshires.			Guernseys.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Preble	.....	....	....	.....	....	....
Putnam	.....	98 00	....	.....	....	....
Ross	.....	....	....	.....	....	....
Sandusky	.....	....	....	.....	....	....
Stark	.....	....	....	.....	....	....
Summit	10	80 00	48 50	.....	....	....
Trumbull	.....	....	....	.....	....	....
Tuscarawas	.....	....	....	.....	....	....
Union	.....	....	....	.....	....	....
Van Wert	.....	....	....	6	86 00	39 00
Warren	.....	....	....	.....	....	....
Washington	†	....	....	.....	....	....
Wayne	.....	....	....	.....	....	....
Wood	.....	62 00	....	*	....	....
Wyandot	.....	....	....	.....	....	....
Totals	125	$752 25	$344 50	16	$229 00	$75 00

*Included in Jerseys.
†Included in Hereford.

TABLE II — CATTLE — Continued.

Counties.	All other pure breeds.			Sweepstakes where different breeds compete.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	16	$32 00	$32 00			
Allen	6	25 50	16 20			
Ashtabula		52 00		3	$40 00	
Athens				3	16 00	$16 00
Auglaize	7	27 00	27 00		54 00	54 00
Belmont					6 00	
Brown						
Butler						
Carroll						
Champaign						
Clark		62 00		25	58 00	58 00
Clermont						
Columbiana						
Coshocton	12	88 00	57 50	35	168 00	128 00
Crawford				7	12 00	
East Cuyahoga	18	25 00	13 50	9	19 00	19 00
West Cuyahoga	17	51 25	38 75			
Erie						
Fairfield				8	52 00	52 00
Fulton				12	30 00	22 00
Geauga				42	49 00	40 00
Greene				10	90 00	90 00
Guernsey						
Hamilton	73	88 00	59 50			
Hancock				23	65 00	60 00
Hardin				7	20 00	20 00
Harrison				23	53 00	24 00
Jefferson				2	54 00	18 00
Lawrence	14	27 00	15 00			
Licking				23	44 00	44 00
Logan	11	54 00	27 50		50 00	9 00
Lorain						
Madison				17	54 00	54 00
Mahoning				11	50 00	50 00
Marion	18	55 00	43 00	35	87 00	77 00
Medina				12	32 00	20 00
Meigs		13 00				
Mercer	*18	38 00	38 00	13	10 00	10 00
Miami				24	125 00	60 00
Monroe	5	46 00	18 00	2	16 00	7 00
Montgomery	18	37 50	27 00			
Morrow	16	58 00	43 00			
Muskingum						
Noble				12	57 00	36 00
Ottawa						
Paulding	20	42 50	32 00	8	50 00	43 00
Perry	8	36 50	15 00		10 00	

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* Grade cattle.

TABLE — II — CATTLE — Continued.

Counties.	All other pure breeds.			Sweepstakes where different breeds compete.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Portage	.....	....	....	.....	....	....
Preble	6	15 00	15 00	.....	....	....
Putnam	30	112 00	78 00	13	66 00	32 00
Ross	.....	....	....	3	69 00	20 00
Sandusky	.....	....	....	9	30 00	30 00
Stark	.....	....	....	.....	....	....
Summit	22	34 50	33 50	.....	....	....
Trumbull	.....	....	....	16	52 00	52 00
Tuscarawas	.....	....	....	.....	....	....
Union	.....	....	....	.....	....	....
Van Wert	.....	....	....	39	108 00	108 00
Warren	.....	....	....	11	53 00	53 00
Washington	8	42 50	19 50	.....	....	....
Wayne	.....	....	....	.....	....	....
Wood	5	12 00	12 00	18	93 00	93 00
Wyandot	.....	....	....	.....	10 00	....
Totals	348	$1,074 25	$660 95	475	$1,852 00	$1,399 00

TABLE II — CATTLE AND HORSES — Continued.

Counties.	Fat cattle and work oxen.			Thoroughbreds (running horses.)		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	2	$10 00	$10 00			
Allen				30	$96 00	$67 95
Ashtabula		26 00				
Athens						
Auglaize	8	27 00	27 00	9	58 00	50 00
Belmont		11 00		1	25 00	4 00
Brown	3	8 00	5 00			
Butler						
Carroll	4	14 00	6 00			
Champaign						
Clark					68 00	
Clermont						
Columbiana						
Coshocton	1	20 00	4 00	5	95 50	35 00
Crawford	2	15 00		14		
East Cuyahoga	10	49 50	24 00			
West Cuyahoga	3	13 50	3 00	5	100 00	60 00
Erie						
Fairfield						
Fulton		15 00				
Geauga	8	22 00	10 00	20	50 00	30 00
Greene						
Guernsey	8	66 00	20 00			
Hamilton						
Hancock						
Hardin	1	40 00	3 00	5	125 00	93 25
Harrison						
Jefferson	12	24 00	40 00			
Lawrence	12	33 00	25 00	3	15 00	15 00
Licking	1	41 00	8 00	10	93 00	55 00
Logan	1	16 50	5 00			
Lorain	3	23 00	9 00			
Madison				12	71 00	27 50
Mahoning						
Marion	13	38 00	31 00	2	12 00	6 00
Medina	1	13 50	2 00			
Meigs	2	32 00	5 00			
Mercer				1	93 00	10 00
Miami						
Monroe						
Montgomery						
Morrow						
Muskingum						
Noble	9	63 00	17 50			
Ottawa						
Paulding				4	32 00	5 00
Perry						
Portage	15	43 50	20 00			

TABLE II — CATTLE AND HORSES — Continued.

Counties.	Fat cattle and work oxen.			Thoroughbreds (running horses.)		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Preble	5	30 00	30 00			
Putnam	2	26 00	5 00			
Ross						
Sandusky	7	23 00	20 00			
Stark						
Summit						
Trumbull	8	23 00	23 00			
Tuscarawas						
Union						
Van Wert						
Warren				20	215 00	115 00
Washington	16	23 50	24 00	7	49 50	19 00
Wayne						
Wood	7	47 00	28 00			
Wyandot						
Totals	164	$837 00	$404 50	148	$1,198 00	$592 70

TABLE II — HORSES — Continued.

Counties.	Roadsters.			General purpose.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	35	$182 00	$154 00	71	$156 00	$117 00
Allen	16	25 50	21 15	7	25 50	11 70
Ashtabula	54	94 00	74 00	34	94 00	66 00
Athens	32	61 00	56 00	30	59 00	44 00
Auglaize	13	59 00	47 00	12	59 00	49 00
Belmont	36	73 00	46 00	10	59 00	22 00
Brown	35	150 00	150 00	72	122 00	122 00
Butler	90	187 00	187 00	104	187 00	187 00
Carroll	45	91 00	75 00	47	91 00	72 00
Champaign	124	149 00	124 00	69	89 00	84 00
Clark	71	163 00	134 00	35	88 00	76 00
Clermont	38	117 00	101 00	68	150 00	135 00
Columbiana	22	93 00	57 00	25	93 00	69 00
Coshocton	36	141 00	101 00	28	141 00	89 50
Crawford	17	93 00	....	11	93 00	....
East Cuyahoga	25	55 50	45 50	32	61 50	40 00
West Cuyahoga	23	67 00	33 00	23	43 00	38 00
Erie	.....	....	....	12	56 00	12 50
Fairfield	82	132 00	132 00	64	132 00	127 00
Fulton	56	154 50	110 00	27	70 50	39 50
Geauga	61	90 00	85 00	62	90 00	90 00
Greene	33	86 00	81 00	22	76 00	60 00
Guernsey	35	93 00	89 00	28	91 00	71 00
Hamilton	70	163 00	121 00	87	178 00	159 00
Hancock	28	104 00	75 00	15	104 00	55 00
Hardin	39	95 00	79 00	25	190 00	65 00
Harrison	35	56 00	47 00	.....	....	....
Jefferson	43	115 00	86 00	24	90 00	74 00
Lawrence	.....	25 00	25 00	9	47 00	31 00
Licking	37	134 00	125 00	27	99 00	82 00
Logan	132	264 50	190 50	80	154 00	124 50
Lorain	15	66 00	45 00	13	66 00	41 00
Madison	60	104 00	100 00	.....	....	....
Mahoning	68	178 00	127 00	53	113 00	82 00
Marion	68	177 00	124 00	49	101 00	88 00
Medina	70	70 00	66 50	52	42 00	32 50
Meigs	41	98 00	87 00	2	26 00	7 00
Mercer	98	186 00	163 00	54	93 00	64 00
Miami	68	194 00	180 00	75	181 00	151 00
Monroe	.....	....	....	8	38 00	26 00
Montgomery	30	126 00	76 50	24	73 50	22 00
Morrow	68	156 00	108 00	35	90 00	64 00
Muskingum	24	155 00	90 75	32	155 00	110 25
Noble	6	18 00	18 00	14	126 00	46 00
Ottawa	3	29 00	....	.....	....	....
Paulding	21	72 00	25 75	8	77 00	38 50
Perry	6	39 00	19 00	8	39 00	21 00
Portage	16	74 50	23 00	23	74 50	38 00
Preble	55	134 00	119 00	59	134 00	122 00

TABLE II — HORSES — Continued.

Counties.	Roadsters.			General purpose.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Putnam	111	302 00	190 00	86	156 00	105 00
Ross	36	116 00	93 00	18	58 00	48 00
Sandusky	25	130 00	65 00	56	142 00	127 00
Stark	42	249 00	170 00	21	99 00	60 00
Summit	43	153 00	108 50	44	89 50	75 00
Trumbull	66	122 00	94 00	45	125 00	83 00
Tuscarawas	30	145 00	81 00	8	50 00	30 00
Union	46	64 00	60 00	......	....	....
Van Wert	44	129 00	99 00	29	130 00	99 00
Warren	39	91 00	89 00	37	108 00	96 00
Washington	15	67 50	35 50	11	61 00	13 00
Wayne	31	121 50	80 00	14	51 00	37 00
Wood	40	120 00	88 00	......	....	....
Wyandot	26	114 00	68 00	13	96 00	54 00
Totals	2,674	$7,113 50	$5,344 65	2,051	$5,583 00	$3,992 95

TABLE II — HORSES — Continued.

Counties.	Draft horses, all classes.			Coach horses, all classes.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	36	$167 00	$115 00	10	$19 00	$19 00
Allen	56	317 50	186 30	5	66 00	8 90
Ashtabula	11	94 00	38 00	......	....	....
Athens	10	59 00	35 00	12	62 00	41 00
Auglaize	22	225 00	60 00	23	240 00	72 00
Belmont	1	61 00	4 00	......	....	....
Brown	33	122 00	95 00	9	35 00	35 00
Butler	35	111 00	106 00	61	131 00	131 00
Carroll	24	91 00	54 00	......	....	....
Champaign	85	208 00	132 00	......	....	....
Clark	45	234 00	148 00	5	116 00	33 00
Clermont	43	153 00	114 00	......	....	....
Columbiana	9	93 00	35 00	......	....	....
Coshocton	29	142 00	97 00	......	....	....
Crawford	8	94 00	30 00	4	93 00	20 00
East Cuyahoga	10	53 50	23 50	5	13 00	11 00
West Cuyahoga	19	67 00	47 50	6	67 00	32 00
Erie	13	91 00	24 75	......	....	....
Fairfield	58	132 00	108 00	......	....	....
Fulton	36	234 00	112 00	2	82 50	10 00
Geauga	49	70 00	65 00	......	....	....
Greene	7	87 00	32 00	8	37 00	33 00
Guernsey	20	93 00	65 00	......	....	....
Hamilton	......	....	....	......	....	....
Hancock	35	105 00	105 00	9	169 00	73 00
Hardin	30	190 00	80 00	4	85 00	14 00
Harrison	34	66 00	49 00	44	50 00	47 00
Jefferson	19	135 00	55 00	1	35 00	12 00
Lawrence	20	47 00	30 00	11	47 00	18 00
Licking	10	84 00	54 00	......	....	....
Logan	57	242 50	158 00	......	....	....
Lorain	15	66 00	45 50	11	66 00	36 00
Madison	40	221 00	122 50	31	83 00	75 00
Mahoning	21	113 00	53 00	......	....	....
Marion	59	272 00	150 00	......	....	....
Medina	29	61 50	41 50	45	61 50	45 00
Meigs	......	98 00	....	......	....	....
Mercer	32	186 00	106 00	2	93 00	15 00
Miami	74	318 00	257 00	25	169 00	125 00
Monroe	11	58 00	41 00	......	....	....
Montgomery	40	150 00	118 00	28	114 50	51 50
Morrow	64	210 00	102 00	......	....	....
Muskingum	13	155 00	58 75	......	....	....
Noble	6	82 50	19 00	......	....	....
Ottawa	......	....	....	......	....	....
Paulding	7	90 00	27 00	3	36 00	10 00
Perry	3	39 00	13 50	......	....	....
Portage	16	74 50	45 00	......	....	....

TABLE II — HORSES — Continued.

Counties.	Draft horses, all classes.			Coach horses, all classes.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Preble	27	117 00	94 00	39	134 00	127 00
Putnam	97	318 00	196 00	30	156 00	97 00
Ross	32	128 00	101 00	......	....	....
Sandusky	52	247 00	230 00	12	42 00	24 00
Stark	28	294 00	110 00	......	....	....
Summit	24	173 00	93 50	21	139 50	72 50
Trumbull	18	105 00	57 00	......	....	....
Tuscarawas	13	100 00	59 00	......	....	....
Union	35	242 00	108 00	5	51 00	11 00
Van Wert	52	590 00	163 00	29	116 00	73 00
Warren	......	....	....	10	30 00	30 00
Washington	9	61 00	26 00	......	....	....
Wayne	21	113 50	50 00	......	....	....
Wood	26	289 00	104 00	12	57 00	43 00
Wyandot	27	96 00	64 00	......	....	....
Totals	1,751	$8,986 50	$4,913 30	522	$2,696 00	$1,444 90

TABLE II — HORSES — Continued.

Counties.	Sweepstakes where different breeds compete.			Horses, all other classes.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	.....	.....	.....	28	$151 00	$80 00
Allen	.....	.....	.....	23	34 50	31 05
Ashtabula	.....	.....	.....	29	54 00	47 00
Athens	4	$20 00	$20 00	18	115 00	61 00
Auglaize	29	80 00	55 00	.....	.....	.....
Belmont	.....	.....	.....	.....	.....	.....
Brown	.....	.....	.....	90	250 00	235 00
Butler	.....	.....	.....	50	173 00	158 00
Carroll	.....	.....	.....	33	41 00	41 00
Champaign	.....	.....	.....	34	34 00	32 00
Clark	18	76 00	41 00	3	59 00	10 00
Clermont	.....	.....	.....	65	142 00	130 00
Columbiana	.....	.....	.....	23	69 00	59 00
Coshocton	8	60 00	60 00	8	91 00	54 00
Crawford	9	66 00	.....	5	.....	.....
East Cuyahoga	5	20 00	14 00	.....	.....	.....
West Cuyahoga	.....	.....	.....	.....	.....	.....
Erie	.....	.....	.....	10	56 00	.....
Fairfield	37	74 00	74 00	31	110 00	100 00
Fulton	.....	.....	.....	.....	.....	.....
Geauga	24	22 00	22 00	.....	.....	.....
Greene	16	60 00	60 00	2	24 00	10 00
Guernsey	33	85 00	69 00	.....	.....	.....
Hamilton	.....	.....	.....	127	339 00	337 00
Hancock	20	56 00	25 00	10	58 00	20 00
Hardin	.....	.....	.....	58	95 00	70 50
Harrison	.....	.....	.....	14	15 00	15 00
Jefferson	.....	.....	.....	13	85 00	50 00
Lawrence	.....	.....	.....	.....	.....	.....
Licking	13	80 00	50 00	32	160 00	147 00
Logan	.....	.....	.....	.....	.....	.....
Lorain	7	48 00	30 00	.....	.....	.....
Madison	.....	.....	.....	37	135 50	96 00
Mahoning	8	45 00	20 00	17	23 00	23 00
Marion	56	103 00	93 00	34	41 00	32 00
Medina	5	32 00	32 00	.....	.....	.....
Meigs	.....	.....	.....	.....	.....	.....
Mercer	.....	.....	.....	.....	.....	.....
Miami	21	115 00	115 00	36	140 00	85 00
Monroe	.....	.....	.....	22	98 00	59 00
Montgomery	31	94 00	58 00	16	48 00	48 00
Morrow	43	60 00	54 00	.....	.....	.....
Muskingum	12	46 00	44 00	.....	.....	.....
Noble	3	45 00	16 00	.....	.....	.....
Ottawa	.....	.....	.....	.....	.....	.....
Paulding	4	.....	.....	.....	.....	.....
Perry	.....	22 00	.....	.....	.....	.....
Portage	.....	.....	.....	6	67 00	21 00

TABLE II — HORSES — Continued.

Counties.	Sweepstakes where different breeds compete.			Horses, all other classes.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Preble	8	30 00	30 00	25	72 00	72 00
Putnam	29	57 00	57 00	18	41 00	31 00
Ross	18	48 00	48 00	9	60 00	47 00
Sandusky	5	32 00	24 00	......	....	....
Stark	9	65 00	28 00	11	33 00	6 00
Summit	......	....	....	7	48 00	36 00
Trumbull	......	....	....	......	....	....
Tuscarawas	......	....	....	2	11 00	3 00
Union	......	....	....	......	....	....
Van Wert	23	96 00	96 00	23	150 00	118 00
Warren	......	....	....	7	45 00	45 00
Washington	......	....	....	5	44 25	12 75
Wayne	......	....	....	2	26 00	6 50
Wood	14	120 00	120 00	39	118 50	83 00
Wyandot	1	16 00	8 00	3	22 00	18 00
Totals	513	$1,773 00	$1,363 00	1,025	$3,377 75	$2,519 80

TABLE II — HORSES AND SHEEP — Continued.

Counties.	Speed horses.			Fine wools.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	......	....	....	18	$54 00	$54 00
Allen	124	$2,146 00	$898 00	60	71 50	63 35
Ashtabula	62	1,350 00	....	15	26 00	26 00
Athens	23	1,150 00	525 00	43	67 00	61 00
Auglaize	......	2,050 00	1,375 00	31	90 00	87 50
Belmont	26	850 00	535 00	18	43 00	32 50
Brown	......	....	....	17	35 00	35 00
Butler	88	2,450 00	2,055 00	32	102 00	98 00
Carroll	40	1,000 00	985 00	45	84 00	75 00
Champaign	76	2,300 00	2,105 00	69	156 00	146 00
Clark	72	2,500 00	1,955 00	53	120 00	117 00
Clermont	26	490 00	490 00	......	....	....
Columbiana	......	800 00	800 00	10	63 00	32 50
Coshocton	69	1,800 00	950 00	71	168 00	168 00
Crawford	......	....	....	19	30 00	21 00
East Cuyahoga	47	1,000 00	695 00	22	53 00	45 00
West Cuyahoga	67	1,250 00	305 00	40	48 00	46 00
Erie	......	....	....	21	35 00	42 00
Fairfield	71	2,350 00	2,310 00	49	110 00	103 00
Fulton	44	1,000 00	953 50	32	63 00	51 00
Geauga	42	950 00	850 00	34	40 00	40 00
Greene	127	1,925 00	1,580 00	12	32 00	32 00
Guernsey	21	339 00	325 00	35	108 00	75 00
Hamilton	115	2,600 00	2,065 00	85	185 00	126 50
Hancock	32	1,500 00	743 00	93	102 00	102 00
Hardin	24	1,000 00	750 00	30	31 00	31 00
Harrison	33	875 00	855 00	47	52 00	50 00
Jefferson	34	620 00	560 00	8	68 00	30 00
Lawrence	19	120 00	120 00	......	....	....
Licking	54	2,550 00	1,930 00	50	79 00	79 00
Logan	48	1,850 00	1,370 00	65	49 50	40 50
Lorain	......	....	....	32	85 50	74 00
Madison	96	2,015 00	1,605 00	16	42 50	42 50
Mahoning	40	1,000 00	966 85	30	62 00	56 00
Marion	57	1,200 00	1,200 00	58	108 00	84 00
Medina	30	1,050 00	530 00	75	73 00	49 00
Meigs	18	550 00	530 00	11	33 00	30 00
Mercer	......	....	....	35	35 00	35 00
Miami	108	2,250 00	2,025 00	28	30 00	30 00
Monroe	37	900 00	895 00	22	108 00	75 00
Montgomery	65	3,200 00	2,832 50	*64	263 50	169 00
Morrow	80	1,550 00	1,350 00	45	90 00	65 00
Muskingum	44	2,100 00	1,520 00	45	98 00	73 75
Noble	16	255 00	255 00	......	....	....
Ottawa	11	325 00	325 00	......	....	....
Paulding	27	1,250 00	916 00	......	....	....
Perry	......	....	....	11	27 00	21 00

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*Includes all sheep.

TABLE II — HORSES AND SHEEP — Continued.

Counties.	Speed horses.			Fine wools.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Portage	26	420 00	420 00	6	27 00	18 00
Preble	52	1,470 00	1,232 00	......	....	....
Putnam	41	1,525 00	920 00	49	92 00	78 00
Ross	......	2,050 00	2,050 00	4	28 00	17 00
Sandusky	......	....	....	39	49 00	49 00
Stark	43	1,250 00	1,250 00	35	94 00	91 00
Summit	101	1,950 00	1,950 00	27	74 50	52 00
Trumbull	......	1,500 00	757 50	23	39 00	39 00
Tuscarawas	50	1,300 00	1,300 00	30	56 00	54 00
Union	40	1,600 00	991 25	75	142 00	89 00
Van Wert	......	....	971 00	21	50 00	50 00
Warren	55	1,000 00	800 00	25	72 00	54 00
Washington	......	62 00	....	9	42 75	19 50
Wayne	52	1,550 00	1,550 00	16	32 50	32 50
Wood	15	77 00	51 00	14	40 00	40 00
Wyandot	......	....	....	8	50 00	34 00
Totals	2,488	$72,214 00	$57,277 60	1,977	$4,110 10	$3,431 10

TABLE II — SHEEP — Continued.

Counties.	Coarse and long wools.			Sweepstakes where different breeds compete.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	18	$54 00	$54 00	.....	....	....
Allen	81	143 50	117 55	.....	....	....
Ashtabula	119	169 00	160 00	26	56 00	40 00
Athens	14	38 00	27 00	9	14 00	14 00
Auglaize	37	90 00	82 00	16	35 00	35 00
Belmont	14	41 00	15 50	.....	....	....
Brown	57	140 00	140 00	.....	....	....
Butler	65	204 00	185 00	.....	....	....
Carroll	23	84 00	73 00	.....	....	....
Champaign	130	272 00	243 00	.....	....	....
Clark	135	240 00	235 00	.....	....	....
Clermont	37	144 00	114 00	.....	....	....
Columbiana	23	92 00	68 50	.....	....	....
Coshocton	43	126 00	104 00	34	96 00	91 00
Crawford	18	30 00	....	5	8 00	8 00
East Cuyahoga	13	34 75	26 25	14	16 75	13 50
West Cuyahoga	63	86 25	80 25	.....	....	....
Erie	29	71 00	40 25	.....	....	....
Fairfield	59	110 00	105 00	36	88 00	88 00
Fulton	42	72 00	68 00	.....	....	....
Geauga	84	82 00	75 00	48	44 00	36 00
Greene	93	192 00	154 00	11	21 00	21 00
Guernsey	.....	....	....	10	45 00	40 00
Hamilton	22	37 00	37 00	.....	....	....
Hancock	88	102 00	102 00	34	28 00	28 00
Hardin	64	166 00	103 00	.....	....	....
Harrison	29	25 00	25 00	12	20 00	20 00
Jefferson	9	35 00	24 00	4	60 00	25 00
Lawrence	.....	....	....	11	36 00	18 00
Licking	60	211 00	169 00	40	36 00	36 00
Logan	46	104 00	73 00	.....	....	....
Lorain	40	114 00	108 00	.....	....	....
Madison	56	154 00	145 00	.....	....	....
Mahoning	57	124 00	110 00	6	15 00	15 00
Marion	89	108 00	108 00	80	74 00	74 00
Medina	119	131 00	98 00	7	27 00	20 00
Meigs	2	33 00	8 00	.....	....	....
Mercer	65	105 00	100 00	9	15 00	15 00
Miami	88	150 00	150 00	18	36 00	36 00
Monroe	18	72 00	52 00	.....	....	....
Montgomery	*	....	....	*	....	....
Morrow	53	150 00	137 00	38	56 00	56 00
Muskingum	13	98 00	32 50	.....	....	....
Noble	.....	....	....	5	45 00	9 00
Ottawa	.....	....	....	.....	....	....
Paulding	5	54 00	9 00	.....	....	....
Perry	.....	....	....	.....	....	....

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*Included in fine wools.

TABLE II — SHEEP — Continued.

Counties.	Coarse and long wools.			Sweepstakes where different breeds compete.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Portage	29	135 00	73 50	7	22 50	16 50
Preble	128	148 00	125 00	......	....	....
Putnam	91	190 00	138 00	17	20 00	20 00
Ross	12	28 00	27 00	6	15 00	10 00
Sandusky	70	98 00	98 00	......	....	....
Stark	40	188 00	130 00	......	....	....
Summit	49	185 00	139 00	......	....	....
Trumbull	40	114 00	114 00	......	....	....
Tuscarawas	21	56 00	44 00	6	12 00	12 00
Union	11	22 00	22 00	......	....	....
Van Wert	83	225 00	216 00	15	30 00	30 00
Warren	......	25 00	....	4	8 00	8 00
Washington	16	43 75	28 25	14	23 00	18 50
Wayne	19	32 50	30 50	......	....	....
Wood	39	80 00	76 00	5	15 00	15 00
Wyandot	11	50 00	44 00	......	....	....
Totals	2,779	$6,108 75	$5,063 05	547	$1,017 25	$868 50

TABLE II — SWINE — Continued.

Counties.	Poland Chinas.			Berkshires.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	14	$27 00	$22 00	......	....	....
Allen	55	52 50	47 25	42	$52 50	$40 50
Ashtabula	15	42 00	42 00	19	42 00	42 00
Athens	9	23 00	17 00	......	....	....
Auglaize	54	60 00	60 00	23	60 00	60 00
Belmont	2	12 00	4 00	......	12 00	....
Brown	48	55 00	55 00	21	45 00	45 00
Butler	39	72 00	72 00	21	72 00	72 00
Carroll	20	42 00	36 00	8	42 00	22 00
Champaign	16	52 00	44 00	49	52 00	52 00
Clark	19	56 00	38 00	29	56 00	56 00
Clermont	31	40 00	38 00	14	40 00	39 00
Columbiana	6	41 00	26 00	5	41 00	12 00
Coshocton	36	56 00	56 00	24	56 00	36 00
Crawford	23	39 00	29 00	7	39 00	16 00
East Cuyahoga	*12	32 00	27 50	8	32 00	21 00
West Cuyahoga	20	41 00	39 00	18	41 00	35 00
Erie	6	17 00	14 25	1	17 00	3 00
Fairfield	36	72 00	67 00	24	72 00	72 00
Fulton	10	30 00	22 00	6	30 00	14 00
Geauga	34	30 00	28 00	38	30 00	24 00
Greene	23	32 00	32 00	11	32 00	30 00
Guernsey	6	22 00	8 00	......	....	....
Hamilton	51	80 00	80 00	36	80 00	80 00
Hancock	28	39 00	39 00	10	39 00	18 00
Hardin	7	48 00	23 00	11	48 00	20 00
Harrison	†26	14 00	14 00	‡	....	....
Jefferson	11	15 00	15 00	6	15 00	15 00
Lawrence	2	16 00	5 00	......	....	....
Licking	32	60 00	54 00	22	60 00	54 00
Logan	15	57 00	52 00	20	57 00	43 50
Lorain	13	39 00	37 00	9	39 00	28 00
Madison	15	71 00	54 50	17	71 00	65 00
Mahoning	......	....	....	36	56 00	49 00
Marion	26	48 00	37 00	7	48 00	11 00
Medina	9	33 00	17 00	14	26 00	25 50
Meigs	4	8 00	3 00	4	8 00	4 00
Mercer	25	56 00	56 00	17	56 00	44 00
Miami	48	63 00	63 00	33	64 00	63 00
Monroe	16	34 00	32 00	......	....	....
Montgomery	30	49 50	37 50	8	49 50	30 00
Morrow	16	42 00	26 00	8	42 00	20 00
Muskingum	18	60 00	44 00	29	60 00	58 00
Noble	......	....	....	......	....	....
Ottawa	......	....	....	......	....	....

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*Includes Duroc Jerseys.
†Includes Berkshires and Chester whites
‡Included in Poland Chinas.

TABLE II — SWINE — Continued.

Counties.	Poland Chinas.			Berkshires.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Paulding	8	46 50	19 88	......	....	....
Perry	......	....	....	......	....	....
Portage	9	27 00	24 50	......	....	....
Preble	9	60 00	20 00	8	60 00	39 00
Putnam	40	70 00	63 00	1	70 00	3 00
Ross	......	....	....	3	40 00	5 00
Sandusky	44	61 00	56 00	13	60 00	50 00
Stark	20	62 00	62 00	19	62 00	56 00
Summit	33	64 50	64 50	49	64 50	64 50
Trumbull	12	27 00	27 00	11	27 00	19 00
Tuscarawas	3	27 00	8 00	5	27 00	14 00
Union	32	37 00	35 00	8	37 00	24 00
Van Wert	22	84 00	73 00	36	84 00	84 00
Warren	21	60 00	53 00	21	47 00	47 00
Washington	5	26 00	9 00	......	28 00	....
Wayne	10	30 00	22 50	2	30 00	5 00
Wood	12	56 00	42 00	9	56 00	42 00
Wyandot	‡10	51 00	33 00	13	51 00	28 00
Totals	1,216	$2,567 00	$2,126 38	853	$2,425 50	$1,800 00

Includes Chester whites and Duroc Jerseys.

TABLE II — SWINE — Continued.

Counties.	Chester whites.			Duroc Jerseys.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	15	$28 00	$28 00	9	$28 00	$24 00
Allen	56	52 50	47 25	42	52 50	40 50
Ashtabula	14	42 00	42 00	3	42 00	14 00
Athens	5	21 00	13 00	......	....	....
Auglaize	38	60 00	60 00	16	60 00	58 00
Belmont	......	12 00	....	......	....	....
Brown	15	45 00	45 00	19	45 00	45 00
Butler	14	72 00	69 00	21	73 00	73 00
Carroll	18	42 00	41 00	......	....	....
Champaign	25	52 00	44 00	27	52 00	48 00
Clark	31	56 00	52 00	34	56 00	56 00
Clermont	16	40 00	34 00	9	40 00	26 00
Columbiana	4	41 00	18 00	......	....	....
Coshocton	22	56 00	48 00	17	56 00	37 00
Crawford	......	....	....	8	38 00	10 00
East Cuyahoga	6	32 00	17 00	‡	....	....
West Cuyahoga	8	41 00	23 50	17	41 00	39 00
Erie	1	17 00	....	......	....	....
Fairfield	25	72 00	72 00	......	....	....
Fulton	12	30 00	27 00	21	30 00	30 00
Geauga	28	30 00	22 00	......	....	....
Greene	16	32 00	32 00	19	32 00	32 00
Guernsey	5	22 00	11 00	......	....	....
Hamilton	47	80 00	56 00	10	80 00	80 00
Hancock	16	39 00	24 00	22	39 00	34 00
Hardin	24	48 00	44 00	17	48 00	42 00
Harrison	‡	....	....	‡	....	....
Jefferson	5	15 00	14 00	......	....	....
Lawrence	3	16 00	8 00	......	....	....
Licking	8	60 00	36 00	9	60 00	17 00
Logan	28	57 00	52 50	29	57 00	54 00
Lorain	5	39 00	18 00	7	39 00	21 00
Madison	24	71 00	71 00	26	71 00	69 00
Mahoning	2	51 00	8 00	......	....	....
Marion	21	48 00	45 00	3	48 00	7 00
Medina	12	32 00	24 00	......	....	....
Meigs	3	8 00	4 00	3	8 00	7 00
Mercer	27	56 00	56 00	41	56 00	52 00
Miami	43	63 00	63 00	17	63 00	42 00
Monroe	1	34 00	4 00	......	....	....
Montgomery	19	49 50	39 00	......	....	....
Morrow	11	42 00	19 00	14	42 00	27 00
Muskingum	16	60 00	48 00	6	60 00	12 00
Noble	......	....	....	......	....	....
Ottawa	......	....	....	......	....	....
Paulding	6	46 50	16 88	15	46 50	34 75
Perry	......	....	....	......	....	....

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‡Included in Poland Chinas.

TABLE II — SWINE — Continued.

Counties.	Chester whites.			Duroc Jerseys.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Portage	3	27 00	9 50	4	27 00	15 00
Preble	11	60 00	43 00	15	60 00	40 00
Putnam	54	70 00	70 00	53	70 00	70 00
Ross	16	40 00	29 00	......	....	....
Sandusky	26	56 00	56 00	......	....	....
Stark	1	62 00	4 00	......	....	....
Summit	31	64 50	57 00	......	....	....
Trumbull	3	27 00	10 00	......	....	....
Tuscarawas	12	27 00	23 00	......	....	....
Union	......	37 00	....	11	37 00	30 00
Van Wert	43	84 00	84 00	48	84 00	84 00
Warren	......	10 00	....	13	47 00	33 00
Washington	8	26 00	18 00	......	....	....
Wayne	10	30 00	25 00	......	....	....
Wood	11	56 00	52 00	......	....	....
Wyandot	‡	....	....	‡	....	....
Totals	924	$2,487 00	$1,876 63	625	$1,688 00	$1,303 25

‡Included in Poland Chinas.

TABLE II — SWINE — Continued.

Counties.	All other breeds.			Sweepstakes where different breeds compete.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	......	....	....	......	....	....
Allen	27	$105 00	$57 15	......	....	....
Ashtabula	7	42 00	28 00	......	....	....
Athens	......	....	....	4	$8 00	$8 00
Auglaize	27	60 00	52 00	15	18 00	18 00
Belmont	......	24 00	....	3	8 00	....
Brown	......	....	....	......	....	....
Butler	......	....	....	......	....	....
Carroll	......	....	....	......	....	....
Champaign	46	52 00	52 00	......	....	....
Clark	22	56 00	52 00	24	35 00	30 00
Clermont	......	....	....	......	....	....
Columbiana	......	....	....	......	....	....
Coshocton	......	....	....	12	20 00	20 00
Crawford	......	....	....	7	8 00	8 00
East Cuyahoga	11	45 00	21 25	2	6 00	6 00
West Cuyahoga	14	41 00	39 00	......	....	....
Erie	......	....	....	......	....	....
Fairfield	......	....	....	20	36 00	36 00
Fulton	......	30 00	....	8	31 50	27 50
Geauga	18	30 00	15 00	28	20 00	20 00
Greene	......	....	....	40	80 00	80 00
Guernsey	......	....	....	3	12 00	7 00
Hamilton	17	88 00	72 00	......	....	....
Hancock	26	39 00	18 00	12	39 00	18 00
Hardin	11	48 00	28 00	......	....	....
Harrison	......	....	....	27	26 00	23 00
Jefferson	......	....	....	13	40 00	40 00
Lawrence	......	....	....	......	....	....
Licking	......	....	....	26	80 00	60 00
Logan	......	....	....	......	35 00	....
Lorain	18	78 00	56 00	......	....	....
Madison	......	....	....	......	....	....
Mahoning	......	....	....	1	10 00	2 50
Marion	......	....	....	24	23 00	23 00
Medina	24	28 00	44 50	18	16 00	16 00
Meigs	3	8 00	6 00	......	....	....
Mercer	62	112 00	108 00	10	24 00	24 00
Miami	16	63 00	63 00	21	40 00	40 00
Monroe	1	34 00	4 00	......	....	....
Montgomery	......	....	....	28	60 00	50 00
Morrow	......	....	....	20	24 00	24 00
Muskingum	......	....	....	......	....	....
Noble	......	....	....	......	....	....
Ottawa	......	....	....	......	....	....
Paulding	......	....	....	8	50 00	20 00
Perry	8	22 50	18 00	......	....	....
Portage	8	27 00	22 50	......	....	....

TABLE II — SWINE — Continued.

Counties.	All other breeds.			Sweepstakes where different breeds compete.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Preble	......	....	....	......	....	....
Putnam	80	210 00	58 00	15	12 00	12 00
Ross	9	40 00	19 00	9	14 00	14 00
Sandusky	13	60 00	49 00	10	17 00	17 00
Stark	......	....	....	......	....	....
Summit	39	64 50	61 50	......	....	....
Trumbull	7	27 00	19 00	11	8 00	8 00
Tuscarawas	......	....	....	......	....	....
Union	......	....	....	......	....	....
Van Wert	17	84 00	81 00	20	30 00	30 00
Warren	......	10 00	....	......	....	....
Washington	14	43 00	32 00	......	....	....
Wayne	......	....	....	......	....	....
Wood	13	56 00	52 00	14	29 00	29 00
Wyandot	......	....	....	3	15 00	10 00
Totals	558	$1,627 00	$1,127 90	456	$874 50	$721 00

TABLE II — POULTRY AND MECHANIC ARTS — Continued.

Counties.	Poultry.			Mechanic arts.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	137	$118 00	$52 50	37	$44 50	$23 50
Allen	559	139 25	110 48	38	117 00	56 70
Ashtabula	143	96 00	55 00	3	31 25	50
Athens	80	75 00	46 00	17	70 00	21 00
Auglaize	561	188 00	188 00	2	....	....
Belmont	273	84 24	49 45	28	104 00	19 50
Brown	250	115 00	80 00	27	40 00	25 00
Butler	225	119 50	84 50	......	....	....
Carroll	138	61 50	55 50	20	32 00	32 00
Champaign	234	218 00	129 00	19	69 00	43 00
Clark	343	197 00	142 50	......	....	....
Clermont	5	20 25	2 25	41	80 50	57 50
Columbiana	200	60 00	42 75	14	41 00	36 00
Coshocton	378	253 30	166 80	51	117 75	72 75
Crawford	205	91 25	58 75	89	50 00	50 00
East Cuyahoga	81	....	19 00	148	143 40	70 00
West Cuyahoga	256	71 20	71 20	49	....	....
Erie	143	70 50	42 25	41	83 00	19 50
Fairfield	239	114 00	79 00	......	....	....
Fulton	239	191 65	126 90	25	66 50	41 50
Geauga	144	35 00	29 00	46	20 00	20 00
Greene	153	75 00	67 50	......	....	....
Guernsey	42	47 50	27 50	......	85 00	57 50
Hamilton	239	96 00	91 50	6	130 00	130 00
Hancock	125	180 00	120 00	13	147 00	75 00
Hardin	310	150 00	55 50	75	175 00	39 00
Harrison	115	35 25	28 25	9	44 00	9 50
Jefferson	61	75 00	13 55	31	130 00	39 00
Lawrence	2	32 00	1 60	......	....	....
Licking	77	138 00	53 00	......	....	....
Logan	......	....	....	123	82 50	70 95
Lorain	928	140 00	126 00	366	....	....
Madison	102	151 50	70 00	19	85 00	71 00
Mahoning	202	171 00	130 50	48	63 75	43 25
Marion	194	99 00	99 00	130	194 00	154 00
Medina	395	....	71 30	41	27 50	15 25
Meigs	50	45 00	36 00	12	....	....
Mercer	515	136 00	135 00	117	44 00	41 00
Miami	311	183 00	151 50	101	50 00	50 00
Monroe	50	40 00	37 00	136	20 00	3 90
Montgomery	685	300 50	195 25	60	75 00	26 00
Morrow	115	220 00	55 85	......	....	....
Muskingum	447	209 70	171 13	36	160 50	54 48
Noble	47	60 00	30 00	23	124 00	37 50
Ottawa	8	35 50	5 25	33	128 75	36 50
Paulding	13	88 00	3 47	24	109 00	4 50
Perry	104	72 20	50 15	......	....	....
Portage	308	224 50	108 20	34	75 25	30 50
Preble	......	95 00	95 00	50	100 00	86 00

TABLE II — POULTRY AND MECHANIC ARTS — Continued.

Counties.	Poultry.			Mechanic arts.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Putnam	224	183 00	69 00	160	168 00	130 00
Ross	96	94 00	73 00	55	202 00	167 00
Sandusky	450	180 00	150 00	158	180 00	65 00
Stark	534	272 00	199 95	9	98 00	28 00
Summit	524	302 50	242 20	33	76 00	10 00
Trumbull	121	44 00	29 50	88	120 50	74 00
Tuscarawas	290	101 00	77 25	28	52 00	36 40
Union	475	175 00	168 35	......	....	....
Van Wert	969	....	407 00	82	....	60 00
Warren	200	152 00	127 25	37	75 00	55 50
Washington	34	54 25	15 00	39	212 25	32 75
Wayne	94	75 90	30 05	218	....	....
Wood	191	114 00	79 50	102	....	....
Wyandot	88	120 00	78 60	5	95 00	19 00
Totals	14,720	$7,285 94	$5,406 48	3,196	$4,438 90	$2,340 93

TABLE II — FARM PRODUCTS AND HORTICULTURE — Continued.

Counties.	Farm products.			Fruits and flowers.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	313	$90 00	$75 50	107	$50 00	$46 00
Allen	287	115 50	74 70	65	85 50	23 40
Ashtabula	360	133 30	99 35	218	127 00	76 15
Athens	74	74 00	18 50	355	136 00	119 25
Auglaize	307	91 50	89 00	141	41 00	36 00
Belmont	44	33 00	10 25	43	47 00	36 00
Brown	650	140 00	120 00	‡1000	150 00	125 00
Butler	303	88 50	84 00	91	41 00	37 50
Carroll	366	81 00	65 00	142	70 75	63 75
Champaign	586	155 50	136 75	694	172 25	136 00
Clark	305	344 25	177 25	425	401 00	275 50
Clermont	281	69 75	51 45	‡1373	274 10	236 65
Columbiana	261	88 50	84 25	417	115 50	112 00
Coshocton	160	83 00	75 00	121	70 60	47 75
Crawford	251	108 20	32 90	196	102 00	64 00
East Cuyahoga	238	94 15	69 90	230	64 25	89 50
West Cuyahoga	657	108 80	72 00	484	74 00	46 15
Erie	91	50 25	47 75	286	177 75	152 20
Fairfield	254	186 00	144 00	232	262 00	170 00
Fulton	400	87 45	64 25	365	145 60	91 85
Geauga	572	116 50	108 00	424	82 00	72 00
Greene	398	130 00	110 00	154	95 00	77 00
Guernsey	......	130 50	84 75	‡	108 25	118 25
Hamilton	273	145 50	143 50	159	187 00	130 50
Hancock	145	....	65 00	20	15 00	15 00
Hardin	175	165 00	54 30	‡265	125 00	73 70
Harrison	175	26 50	22 50	‡412	51 50	50 00
Jefferson	357	95 00	67 15	246	60 00	55 85
Lawrence	231	49 80	25 00	‡176	73 40	22 80
Licking	510	167 00	155 00	473	289 00	230 00
Logan	606	89 95	112 15	193	153 00	104 00
Lorain	212	45 00	45 00	260	120 00	68 00
Madison	142	148 00	70 25	191	134 25	86 75
Mahoning	270	169 75	110 25	428	146 45	139 90
Marion	456	172 75	165 00	112	114 75	62 00
Medina	270	46 85	48 25	414	75 40	70 30
Meigs	62	52 00	46 00	‡18	20 00	16 00
Mercer	456	240 00	185 00	‡204	126 00	116 00
Miami	206	139 00	120 50	467	197 00	161 00
Monroe	175	30 00	20 00	110	50 00	29 00
Montgomery	101	134 25	32 75	94	228 80	35 25
Morrow	560	85 00	58 00	450	60 00	35 00
Muskingum	205	134 70	90 76	191	267 90	154 55
Noble	37	67 50	33 00	‡95	70 00	45 00
Ottawa	52	72 25	33 75	110	95 00	65 75
Paulding	76	101 00	61 50	‡63	63 00	12 25
Perry	30	62 50	16 30	17	29 70	9 30

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‡ Includes canned fruits, pickles, jellies etc.

TABLE II — FARM PRODUCTS AND HORTICULTURE — Continued.

Counties.	Farm products.			Fruits and flowers.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Portage	344	109 05	72 00	332	124 20	103 60
Preble	220	120 00	115 00	195	105 00	86 00
Putnam	625	219 00	156 45	183	70 00	44 00
Ross	153	99 00	78 00	304	214 00	177 00
Sandusky	160	80 00	62 00	162	130 00	106 00
Stark	678	182 00	145 00	706	406 00	301 25
Summit	1,456	136 30	281 70	983	225 70	288 10
Trumbull	689	220 00	80 75	‡271	35 25	31 75
Tuscarawas	170	70 00	45 75	246	90 00	65 50
Union	75	24 00	24 00	629	220 55	147 94
Van Wert	1,526	....	402 00	574	....	75 00
Warren	210	79 00	67 75	42	27 00	16 50
Washington	7	177 00	2 40	39	50 65	15 40
Wayne	145	126 00	45 00	62	59 00	52 65
Wood	647	328 75	309 25	316	151 00	125 25
Wyandot	241	147 50	79 90	32	50 25	19 00
Totals	20,286	$7,156 05	$5,642 41	17,807	$7,603 30	$5,694 74

Includes canned fruits, pickles, jellies etc.

TABLE II — DOMESTIC PRODUCTS AND FINE ARTS — Continued.

Counties.	Canned fruits, pickles, jellies, etc.			Fine arts.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	346	$37 00	$37 00	50	$27 50	$26 50
Allen	514	75 75	44 68	143	64 50	59 40
Ashtabula	279	65 25	57 00	165	114 50	97 75
Athens	41	19 00	18 50	11	36 00	7 00
Auglaize	673	107 00	105 50	209	84 50	82 50
Belmont	84	20 00	16 50	8	24 00	50
Brown	*	....	....	40	15 00	12 00
Butler	445	127 50	126 00	118	166 00	154 00
Carroll	295	31 25	26 00	33	25 00	18 00
Champaign	516	71 75	68 50	164	72 00	60 00
Clark	423	140 50	123 50	304	287 25	256 75
Clermont	*	....	....	62	53 00	47 00
Columbiana	354	45 00	41 75	24	23 00	16 00
Coshocton	294	42 50	40 00	144	119 00	105 00
Crawford	153	30 75	13 25	68	127 00	86 00
East Cuyahoga	152	19 10	28 60	102	59 00	46 50
West Cuyahoga	414	31 05	27 90	29	19 10	13 25
Erie	149	37 75	28 50	217	163 25	83 82
Fairfield	96	62 00	49 00	218	254 00	206 00
Fulton	318	62 40	55 75	169	162 25	114 25
Geauga	74	28 00	18 00	58	49 00	39 00
Greene	293	50 00	37 65	280	120 00	87 00
Guernsey	*	....	....	.....	25 50	17 50
Hamilton	152	41 75	39 25	149	132 00	125 00
Hancock	70	35 00	25 00	25	25 00	20 00
Hardin	*	....	....	282	135 00	109 50
Harrison	*	....	....	52	83 00	36 75
Jefferson	533	80 00	79 50	64	45 00	34 40
Lawrence	*	....	....	11	21 25	11 50
Licking	328	98 00	97 00	281	212 00	208 00
Logan	796	21 00	80 00	282	196 50	150 25
Lorain	115	30 00	30 00	35	84 00	82 00
Madison	259	88 25	82 50	46	80 50	46 50
Mahoning	250	38 00	33 20	202	97 50	88 00
Marion	336	33 00	33 00	158	150 75	89 00
Medina	264	24 00	32 35	45	70 15	41 55
Meigs	*	....	....	226	56 50	49 00
Mercer	*	....	....	416	125 00	87 00
Miami	396	98 00	96 00	250	220 00	204 50
Monroe	160	20 00	10 10	100	50 00	30 00
Montgomery	185	97 25	52 25	178	144 00	114 00
Morrow	900	65 00	40 00	300	75 00	30 00
Muskingum	85	42 00	32 14	71	201 00	112 50
Noble	*	....	....	50	50 00	28 00
Ottawa	31	31 50	14 50	13	38 00	5 50
Paulding	*	....	....	35	35 00	7 00
Perry	10	23 30	4 00	.....	....	....

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*Included in fruits and flowers.

TABLE II — DOMESTIC PRODUCTS AND FINE ARTS — Continued.

Counties.	Canned fruits, pickles, jellies, etc.			Fine arts.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Portage	165	33 00	28 40	42	45 00	24 00
Preble	300	35 00	35 00	265	110 00	110 00
Putnam	793	94 00	90 00	104	86 00	64 00
Ross	43	17 00	17 00	131	100 00	85 00
Sandusky	155	60 00	50 00	80	88 00	64 00
Stark	475	112 00	92 25	157	268 00	202 50
Summit	388	97 50	63 50	279	143 50	125 75
Trumbull	*	....	....	116	63 50	51 50
Tuscarawas	240	50 00	37 75	145	146 00	111 50
Union	373	51 90	33 80	66	73 50	51 00
Van Wert	571	....	62 00	146	....	1 80
Warren	238	94 00	59 50	131	65 00	60 25
Washington	81	72 70	28 00	79	109 25	43 50
Wayne	80	50 00	24 45	43	90 00	38 00
Wood	444	49 25	47 75	254	191 75	160 50
Wyandot	24	24 75	24 50	24	20 50	15 75
Totals	15,153	$2,810 70	$2,438 27	7,949	$6,017 50	$4,554 72

*Included in fruits and flowers.

TABLE II — TEXTILE FABRICS — Continued.

Counties.	Textile fabrics.		
	Number of entries.	Amount offered.	Amount awarded.
Adams	421	$141 00	$125 00
Allen	324	199 25	100 81
Ashtabula	538	139 40	117 65
Athens	120	53 00	50 00
Auglaize	666	137 00	135 35
Belmont	53	92 00	13 25
Brown	270	100 00	70 00
Butler	226	207 50	120 00
Carroll	363	77 75	74 75
Champaign	306	134 50	106 50
Clark	285	186 50	149 50
Clermont	493	148 00	125 75
Columbiana	112	71 75	55 75
Coshocton	366	235 00	193 00
Crawford	232	147 40	98 20
East Cuyahoga	264	84 00	58 25
West Cuyahoga	540	60 55	49 30
Erie	402	214 25	54 00
Fairfield	338	221 00	182 00
Fulton	770	287 95	186 35
Geauga	356	143 50	135 00
Greene	576	215 00	174 00
Guernsey	....	56 50	53 00
Hamilton	356	150 50	147 00
Hancock	395	302 50	212 50
Hardin	194	135 00	86 00
Harrison	527	87 50	80 50
Jefferson	331	130 00	87 20
Lawrence	68	43 60	23 65
Licking	368	282 00	270 00
Logan	780	366 00	275 25
Lorain	165	165 00	147 00
Madison	150	161 05	66 50
Mahoning	167	73 25	49 75
Marion	472	125 00	111 00
Medina	344	140 37	94 65
Meigs	100	61 00	50 00
Mercer	590	154 00	104 00
Miami	932	318 00	292 00
Monroe	150	35 00	16 88
Montgomery	323	110 70	87 20
Morrow	1,050	200 00	150 00
Muskingum	64	71 25	43 59
Noble	71	108 00	87 25
Ottawa	69	94 00	25 50
Paulding	87	112 00	27 83
Perry	24	41 25	6 60
Portage	164	90 25	46 50
Preble	325	65 00	65 00

TABLE II — TEXTILE FABRICS — Concluded.

Counties	Textile fabrics.		
	Number of entries.	Amount offered.	Amount awarded.
Putnam	1,050	544 00	422 30
Ross	450	243 00	221 00
Sandusky	250	145 00	105 00
Stark	449	280 00	204 30
Summit	359	104 40	83 00
Trumbull	486	118 50	97 50
Tuscarawas	557	124 00	100 75
Union	279	141 80	107 25
Van Wert	580	....	3 50
Warren	586	150 00	131 75
Washington	244	112 75	55 95
Wayne	230	215 00	161 15
Wood	696	222 25	219 50
Wyandot	186	94 00	59 25
Totals	22,689	$9,471 72	$7,052 96

TABLE III — PROPERTY, RECEIPTS, DISBURSEMENTS, ETC., OF COUNTY AGRICULTURAL SOCIETIES IN 1898.

Counties.	Number of acres in Fair Grounds.	Grounds owned by the Society or leased.	If owned, cash value of real estate and improvements thereon.	Amount of indebtedness, if any, over and above cash on hand.	Number of members.	Amount received from gate admissions.	Amount received from entry fees.	Amount received from booth rents and privilege permits.	Amount received from other sources.	Amount paid in premiums.	Amount paid for real estate, buildings and permanent improvements.	Amount paid for current expenses other than premiums.
Adams	16½	Owned	$6,000 00	$1,200 00	189	$1,523 55	$85 95	$180 00	$682 04	$1,220 00	$528 81	$809 31
Allen	30	Owned	10,000 00	4,968 00	425	2,195 55	573 30	426 55	2,998 99	2,498 02	764 68	3,097 49
Ashtabula	20	Owned	5,000 00	1,650 00	250	1,394 90	31 50	272 15	431 50	1,328 40	....	1,449 45
Athens	32	Owned	15,000 00	8,200 00	129	1,282 25	415 80	231 75	435 75	1,306 25	....	1,018 94
Auglaize	40	Owned	10,000 00	5,500 00	1,058	2,674 45	671 05	1,007 07	274 80	3,312 85	461 31	1,433 09
Belmont	18¼	Owned	1,500 00	900 00	92	716 10	65 00	67 50	645 58	676 98	....	817 11
Brown	16	Owned	3,000 00	....	571	2,199 04	108 20	346 87	552 60	1,624 00	....	1,409 03
Butler	55	Owned	66,000 00	17,315 75	10	5,730 00	603 00	1,879 55	3,016 90	4,263 00	....	5,056 98
Carroll	28	Owned	7,000 00	2,100 00	14	1,929 60	393 25	375 90	2,499 17	1,647 28	1,100 00	1,784 85
Champaign	50	Owned	15,000 00	....	105	3,497 59	1,066 90	605 50	841 64	4,027 25	1,976 57	....
Clark	46	Owned	....	1,146 18	1,116	3,467 75	940 00	1,059 75	1,357 20	4,488 00	815 10	2,667 78
Clermont	24	Owned	10,000 00	900 00	1,200	1,830 65	201 25	500 00	597 15	1,874 60	100 58	1,039 64
Columbiana	25	Owned	10,000 00	3,376 99	552	2,500 95	393 30	402 00	2,581 50	1,651 50	2,500 00	1,603 44
Coshocton	38	Owned	20,000 00	3,100 00	16	4,155 15	743 13	847 15	232 95	3,214 30	480 82	1,889 09
Crawford	30	Owned	3,100 00	286 79	154	49 35	100 60	139 00	1,393 13	....	779 05	903 03
East Cuyahoga	30	Owned	10,000 00	234 59	479	1,910 00	215 15	406 00	55 00	910 20	....	1,545 52
West Cuyahoga	29	Owned	13,976 50	799 00	374	682 75	300 03	441 25	5,250 20	1,400 80	3,893 69	1,385 64
Erie	21½	Owned	50,000 00	2,000 00	263	853 74	142 62	112 00	1,819 92	887 30	....	2,213 39
Fairfield	76	Owned	50,000 00	18,000 00	353	4,167 00	1,535 00	1,059 50	1,944 00	4,557 50	....	3,300 00

Fulton	40	Owned	6,000 00	....	225	2,418 35	216 25	441 41	955 91	2,349 63	707 45	927 73
Geauga	20	Owned	10,000 00	1,250 00	839	2,241 00	575 00	502 00	934 00	2,052 00	500 00	1,203 00
Greene	38	Leased	....	110 00	358	2,902 78	1,046 20	998 75	290 00	3,252 15	939 93	1,600 21
Guernsey	20	Owned	5,000 00	....	10	1,877 85	373 25	123 50	492 35	1,338 50	266 82	704 74
Hamilton	58	Owned	30,000 00	128 00	507	4,741 90	905 00	1,855 37	4,485 69	4,620 75	3,074 89	1,219 69
Hancock	77	Owned	18,000 00	1,500 00	12	1,270 50	178 90	607 27	900 00	1,708 25	325 00	923 45
Hardin	51	....	10,000 00	4,800 00	15	1,195 25	186 25	323 75	1,070 00	423 68	....	2,588 39
Harrison	10	Leased	....	....	10	1,625 10	196 59	96 15	198 95	1,497 50	....	432 05
Jefferson	11½	Leased	....	....	432	1,223 20	300 00	349 35	1,181 00	1,195 65	1,081 15	415 15
Lawrence	10	Leased	....	243 03	55	429 85	98 48	15 00	279 75	294 60	....	266 51
Licking	65	Owned	75,000 00	9,886 02	637	3,350 80	1,150 70	1,364 35	400 00	4,221 00	911 21	2,843 83
Logan	36	Owned	9,000 00	3,900 00	1,400	3,125 40	272 00	777 25	916 64	3,119 30	....	1,953 59
Lorain	32	Owned	25,000 00	5,507 70	287	4,166 85	450 00	714 50	842 59	1,306 50	7,293 83	2,984 80
Madison	47	Leased	....	290 08	590	2,985 50	918 06	607 00	1,472 57	3,228 50	830 00	2,214 71
Mahoning	40	Owned	3,000 00	2,000 00	10	4,134 25	286 30	978 50	1,151 89	2,247 10	150 00	3,951 24
Marion	47	Owned	15,000 00	....	137	3,135 00	510 00	661 00	180 65	3,065 00	....	1,400 00
Medina	28¼	Owned	7,500 00	755 90	1,024	2,722 13	....	240 10	202 68	2,307 92	307 27	1,181 79
Meigs	72	Owned	10,000 00	5,000 00	25	1,744 70	167 60	270 20	139 91	930 00	100 00	1,292 41
Mercer	40	Owned	30,000 00	1,300 00	15	3,410 00	674 00	910 00	2,062 00	3,650 00	1,560 00	1,811 00
Miami	45	Owned	20,000 00	....	24	5,155 75	1,132 55	1,158 50	2,166 92	4,853 50	....	3,970 17
Monroe	15	Owned	3,000 00	2,020 00	10	1,311 18	403 70	204 55	435 85	1,433 88	....	1,024 58
Montgomery	37	Owned	75,000 00	....	22	8,549 67	1,593 00	1,590 00	593 60	4,744 95	....	3,781 29
Morgan	29	Owned	4,500 00	2,500 00	105	....	....	....	600 00	....	157 46	19 90
Morrow	45	Owned	5,000 00	800 00	300	2,441 00	1,038 92	552 15	391 63	2,587 85	13 30	1,816 06
Muskingum	43	Owned	20,000 00	10,083 00	189	3,435 76	866 54	402 00	2,226 51	2,986 46	340 72	3,602 56
Noble	8	Owned	2,000 00	....	30	776 10	175 00	80 00	235 33	677 25	119 73	200 00
Ottawa	10	Leased	....	....	72	185 64	142 50	36 50	....	79 79	35 72	478 21

TABLE III — PROPERTY, RECEIPTS, DISBURSEMENTS, ETC. — Concluded.

Counties.	Number of acres in Fair Grounds.	Grounds owned by the Society or leased.	If owned, cash value of real estate and improvements thereon.	Amount of indebtedness, if any, over and above cash on hand.	Number of members.	Amount received from gate admissions.	Amount received from entry fees.	Amount received from booth rents and privilege permits.	Amount received from other sources.	Amount paid in premiums.	Amount paid for real estate, buildings and permanent improvements.	Amount paid for current expenses other than premiums.
Paulding	32	Owned	$3,000 00	$1,023 60	67	$1,369 62	$310 00	$725 97	$295 09	$1,766 13	$240 00	$708 83
Perry	25	Leased	....	500 00	75	857 30	77 47	227 99	461 65	248 57	103 75	1,624 41
Portage	22¾	Owned	10,000 00	7,000 00	....	753 00	253 32	253 45	1,821 88	343 00	29 81	2,630 00
Preble	39½	Owned	8,000 00	1,000 00	2,795	4,027 00	381 25	746 11	2,273 82	2,952 00	286 00	2,353 00
Putnam	40	Owned	20,000 00	523 56	500	4,101 95	643 95	1,129 21	654 17	3,691 75	790 43	2,399 66
Ross	40	Leased	....	....	255	4,327 55	1,382 00	822 00	490 29	3,456 00	....	3,565 81
Sandusky	35	Owned	18,000 00	2,026 82	1,500	3,471 70	327 45	577 00	398 91	2,884 00	56 00	1,403 88
Stark.	53	Owned	45,000 00	9,724 17	311	2,370 85	784 05	896 20	1,400 00	3,566 25	253 27	1,942 85
Summit	47	Owned	50,000 00	15,000 00	400	6,506 13	1,515 98	1,151 50	3,497 01	4,300 25	2,354 41	5,562 98
Trumbull	36½	Owned	20,000 00	9,500 00	....	1,780 65	162 50	387 19	1,400 00	2,022 75	68 00	1,639 59
Tuscarawas	37½	Owned	30,000 00	8,000 00	10	811 80	483 45	316 55	1,600 00	2,155 90	221 64	838 22
Union	49	Owned	12,000 00	2,182 57	1,925	2,393 35	178 25	725 50	423 70	2,067 59	....	2,335 78
Van Wert	47	Owned	14,000 00	2,000 00	2,000	3,717 60	251 00	1,222 75	2,030 86	4,525 12	851 24	1,898 77
Warren	33	Leased	....	548 17	1,400	1,889 50	569 54	517 50	1,507 21	2,031 50	....	2,500 42
Washington	17	Owned	15,000 00	4,000 00	413	2,143 00	602 50	948 90	413 00	....	1,651 08	3,706 00
Wayne	39	Owned	8,000 00	85 00	125	2,059 47	856 99	233 50	640 70	2,251 30	177 10	1,320 29
Wood	57	Leased	....	....	233	5,315 65	1,645 80	1,239 00	891 71	5,532 25	822 14	2,206 40
Wyandot	30	Leased	....	....	246	945 85	68 28	128 00	93 77	322 65	....	883 77
Totals	2,313¼	....	$941,576 50	$187,164 92	26,965	$162,160 85	$32,935 60	$38,466 96	$72,700 24	$145,476 95	$40,019 99	$120,781 53

OFFICIAL REPORT OF THE SECRETARY

OF THE

OHIO STATE BOARD OF AGRICULTURE

ON

COMMERCIAL FERTILIZERS.

Columbus, Ohio, December 31, 1898.

To the Manufacturers, Dealers and Consumers of Commercial Fertilizers:

Agreeable to the requirement of the Fertilizer Law of Ohio, I herewith present "a correct report of all analyses" of commercial fertilizers made by the State Chemist, "and certificates filed" by the manufacturers or general agents, guaranteeing ingredients, for the year 1898.

The following tables of analyses and valuations of commercial fertilizers include all brands that have been properly licensed to sell in the state that have been found on the markets by the Deputy Inspectors of fertilizers. An additional table will be found giving a list of brands which have been properly licensed, but not found on the markets. If other brands have been sold in this state they have not been found by my Deputies.

All licenses expire December 31, 1898, and no commercial fertilizers can be legally sold or offered for sale in the state after this date until fees are paid and licenses secured by the manufacturers or agents, for the year ending December 31, 1899; so the agent who purposes handling, selling, or dealing in commercial fertilizers in 1899, will do well to see that the manufacturer has paid license on each and every brand he offers for sale, for if the manufacturer fails to do this, the "importer or party who causes it to be sold or offered for sale within the state of Ohio," will be held for the same or subjected to the payment of the fines and penalties prescribed in sections 4446*f* and 7002 of the fertilizer law. To avoid all possibility of trouble, the agent handling commercial fertilizers should see that the manufacturer has complied with the law before goods are offered for sale. Whether or not this has been done can be learned from the manufacturer, or from the Secretary of the State Board of Agriculture, Columbus, Ohio.

All dealers in and purchasers of commercial fertilizers are interested in seeing that the fertilizer law is enforced. If they know of any brands offered for sale during 1898, not appearing in the following lists, they will confer a favor by notifying the Secretary. In a few cases goods are shipped into the state by parties who are ignorant of the law, and who will promptly comply with its requirements as soon as they receive the necessary information.

By the cöoperation of farmers using commercial fertilizers, and of manufacturers and agents who comply with the requirements of the law, I feel confident that but few persons will be able to evade the law, and these only for a short time. The penalties prescribed by law and the injury to the reputation of the manufacturer who seeks to evade it are so great that he cannot afford to neglect to comply with its reasonable requirements.

Manufacturers intending to place their goods on sale in Ohio should send to the Secretary for blanks on which to make formal application for license and claims for fertilizers.

Manufacturers when applying for licenses will facilitate the work of sampling their goods by sending to the Secretary lists of their agents and stating where goods may be found.

SAMPLES SENT BY MANUFACTURERS.

To comply with the law, manufacturers should always send samples of commercial fertilizers to the Secretary of the State Board of Agriculture, when making application for license, that they may be used in comparison with those drawn on the markets for analysis.

ADVANCE REPORTS.

It is my custom to send advance reports to manufacturers to give them an opportunity to check the chemist's work, before the results are published in the annual report, in order to insure accuracy. The analyses reported will be published, unless some errors are shown. It is not sufficient to claim the analyses are wrong because they show lower percentages than the manufacturers claim; this is not proof or evidence of error. The object of sending these advance reports is to enable me to eliminate errors should they exist. Where there are doubts about the findings I will have samples retested and will, if requested, cause parts of the samples in question to be sent to any member of the Association of Official Agricultural Chemists, of which Prof. Harvey W. Wiley, of Washington, D. C., is Secretary; but the manufacturers making such requests must pay the official chemists they select for making reanalyses.

REGULAR ANALYSES.

The work of sampling and analyzing fertilizers is done in accordance with the fertilizer law of the state, and under this law the Official Chemist analyzes such samples as are furnished him by the Secretary of the State Board of Agriculture.

Samples are drawn from the open markets of the state and from stocks purchased by consumers of commercial fertilizers by my duly authorized Deputy Inspectors, Mr. L. M. Coughenour and Mr. Ed. Loewer. Great care is taken in this work and samples are drawn from every brand that can be found in the state by diligent search and inquiry, covering a period from the latter part of March until the early part of December. It is regretted that samples of all licensed goods could not be found for analysis, but until manufacturers and dealers give more care to the matter of informing me where goods can be found, perfect results cannot be obtained. With the information possessed by the Secretary and his Deputy Inspectors the field has been worked diligently and faithfully.

SPECIAL ANALYSES.

I frequently have requests from farmers and agents to make special analyses of samples of commercial fertilizers. I am obliged to say that the law does not provide for these, and I have no fund for paying for the work involved. If it will be an accomodation, I will have special analyses made by the State Chemist of such samples as may be sent me with the proper fees, as follows: "Phosphates" and "Superphosphates": Ammonia, five dollars ($5); total phosphoric acid, five dollars ($5); insoluble phosphoric acid, five dollars ($5); potash, five dollars ($5); or a total of twenty dollars ($20) if all three ingredients are claimed. "Bones" and "Tankages": Ammonia, five dollars ($5); total phosphoric acid, five dollars ($5); potash, five dollars ($5); or a total of fifteen dollars ($15) if all three ingredients are claimed; or, in other words, five dollars ($5) for each and every determination.

In selecting a sample for analysis great care should be taken to secure a fair average of the goods from which the sample is drawn. A small quantity should be taken from five to eight different parts — top, bottom, center, sides, etc. — of each of several packages of fertilizers, and all these small parcels should be carefully and thoroughly mixed together; then from this take from one-half pint to a pint and put into an air-tight package — glass or tin — and send by express or mail, charges prepaid.

VALUATIONS OF COMMERCIAL FERTILIZERS.

Great care has been given to the subject of valuations, and the figures given in the following tables are the results of a careful and painstaking study of the market quotations of fertilizer ingredients and the cost of mixing and placing on the markets of the state well prepared commercial fertilizers.

Of course, it is impossible in any system of commercial valuations to fix absolutely exact prices at which goods are or can be sold, uniformly and under all circumstances and conditions. The two objects sought, however, are, first — to give a uniform scale for commercial comparison; and, second — to give, as nearly as possible, a reasonably correct average price at which the farmer should have been able to buy good fertilizers in 1898.

It is always necessary to bear in mind that the values given to these fertilizers are intended to express their *commercial values*, that is, the cost at which the materials should be put together and sold at a fair profit; and are not necessarily indicative in any way of their *agricultural values*, which, of course, depend on the nature of the soils on which they are used and the needs of the crops grown.

VALUES FOR 1898.

Table No. 1.—Mixed Fertilizers, with Potash.

Ammonia, 12½ cents per pound or $2.50 per unit.

Available phosphoric acid, 5 cents per pound or $1.00 per unit.

Insoluble phosphoric acid, in *bone*, 3 cents per pound or 60 cents per unit.

Insoluble phosphoric acid, in mixed animal and mineral, 1½ cents per pound or 30 cents per unit.

Potash (actual) from sulphate, 5¾ cents per pound or $1.15 per unit.

Potash (actual) from muriate, 5¼ cents per pound or $1.05 per unit.

Table No. 2.—Mixed Fertilizers, without Potash.

Ammonia, 12½ cents per pound or $2.50 per unit.

Available phosphoric acid, 5 cents per pound or $1.00 per unit.

Insoluble phosphoric acid, in *bone*, 3 cents per pound or 60 cents per unit.

Insoluble phosphoric acid, in mixed animal and mineral, 1½ cents per pound or 30 cents per unit.

Table No. 3.—Dissolved Bone.

Ammonia, 12½ cents per pound or $2.50 per unit.

Available phosphoric acid, 5 cents per pound or $1.00 per unit.

Insoluble phosphoric acid, 3 cents per pound or 60 cents per unit.

Table No. 4.—Rock Phosphate.

Available phosphoric acid, 5 cents per pound or $1.00 per unit.

Table No. 5.—Rock Phosphate and Potash.

Available phosphoric acid, 5 cents per pound or $1.00 per unit.

Potash (actual) from sulphate, 5¾ cents per pound or $1.15 per unit.

Potash (actual) from muriate, 5¼ cents per pound or $1.05 per unit.

TABLE NO. 6.—TANKAGE.

Ammonia, 7 cents per pound or $1.40 per unit.

Total phosphoric acid, 3½ cents per pound or 70 cents per unit.

TABLE NO. 7.—TANKAGE AND POTASH.

Ammonia, 7 cents per pound or $1.40 per unit.

Total phosphoric acid, 3½ cents per pound or 70 cents per unit.

Potash (actual) from sulphate, 5¾ cents per pound or $1.15 per unit.

Potash (actual) from muriate, 5¼ cents per pound or $1.05 per unit.

TABLE NO. 8.—BONES.

Ammonia, 12½ cents per pound or $2.50 per unit.

Phosphoric acid, in "fine" bone, 4 cents per pound or 80 cents per unit.

Phosphoric acid, in "medium" bone, 3 cents per pound or 60 cents per unit.

Potash, if found present, valued same as in Table No. 1.

TABLE NO. 9.—POTASH SALTS.

Potash (actual) from sulphate, 5¾ cents per pound or $1.15 per unit.

Potash (actual) from muriate, 5¼ cents per pound or $1.05 per unit.

Perhaps it would not be unreasonable to make an allowance, to cover local agents' commissions, on goods containing the *best materials*, appearing in Tables No. 1 and No. 2, if bought through local agents, of, say, from one dollar to two dollars per ton.

On the last page of this report will be found the fertilizer law of the state, in force at this time.

W. W. MILLER, *Secretary.*

NOTE.—"Unit" is a trade expression used in speaking of the ingredients of commercial fertilizers, and means one per centum of a ton, or twenty pounds; e. g. ammonia 12½ cents per pound or $2.50 per unit, that is, $2.50 for twenty pounds.

TABULATED ANALYSES AND VALUATIONS OF COMMERCIAL FERTILIZERS FOR THE YEAR ENDING DECEMBER 31, 1898.

All analyses are made by Prof. N. W. Lord, Ohio State University, Columbus, Ohio, Official Chemist.

TABLE I.—Mixed Fertilizers, with Potash.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia.		Phosphoric Acid.					Potash.		Total Value.	Record Number.
					Available.		Insoluble.		Total per cent.				
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.		Per cent.	Value.		
5	**Potato Phosphate**	Claimed	1.50		6 00		1.00		7.00	5.00			
	The Pacific Guano Co., New York, N. Y	Found	1.85	$4 62	7.22	$7 22	2.43	$0 73	9.65	3 95	$4 15	$16 72	5
6	**Soluble Pacific Guano**	Claimed	2.50		8.00				10.00	1.50			
	The Pacific Guano Co., New York, N. Y.	Found	2.65	6 62	9.84	9 84	2.43	73	12.27	1.37	1 44	18 63	6
9	**Potato Phosphate**	Claimed	1.50		6.00		1.00		7.00	5.00			
	The Clark's Cove Fertilizer Co., Boston, Mass.	Found	1.65	4 12	6.00	6 00	1.92	58	7.92	5.82	6 11	16 81	9
13	**Armour's Ammo. Bone with Potash**	Claimed	3.00		6.00		1.50		8.00	2.00			
	The Armour Fertilizer Works, Chicago, Ill.	Found	3.85	9 62	8.49	8 49	†3.71	2 23	12.20	*3.37	3 88	24.22	13
14	**Armour's Grain Grower**	Claimed	2.00		8.00		1.50		10.00	2.00			
	The Armour Fertilizer Works, Chicago, Ill.	Found	2.90	7 25	7.67	7 67	†4.66	2 80	12.33	*2.50	2 88	20 60	14
16	**Cumberland Seeding Down Fertilizer**	Claimed	1.00		7.00		2.00		9.00	1.00			
	The Cumberland Bone-Phos. Co., Boston, Mass.	Found	1.35	3 38	7.73	7 73	2.56	77	10.29	1.17	1 23	13 11	16
25	**Armour's Fruit and Root Crop Special**	Claimed	2.00		8.00		1.50		10.00	5.00			
	The Armour Fertilizer Works, Chicago, Ill.	Found	2.70	6 75	9.52	9 52	2.68	80	12.20	6.38	6 70	23 77	25
27	**Great Eastern Corn Phosphate**	Claimed	1.00		8.00		1.00		9.00	4.00			
	The Great Eastern Fertilizer Co., Rutland, Vt.	Found	1.10	2 75	9.72	9 72	1.66	50	11.38	*3.89	4 47	17 44	27

28	**Great Eastern Wheat Special**	Claimed	2.00	......	8.00	......	1.00	......	9.00	2.00	......	......	28
	The Great Eastern Fertilizer Co., Rutland, Vt.	Found	1.80	4 50	8.95	8 95	2.43	73	11.38	*2.08	2 39	16 57	
35	**Bone and Phosphate Mixture**	Claimed	2.50	......	......	......	......	......	15.00	0.50	......	......	35
	The Jarecki Chemical Co., Sandusky, O	Found	3.35	8 38	9.27	9 27	9.08	2 72	18.35	0.31	33	20 70	
40	**Bowker's Harvest Bone**	Claimed	0.75	......	10.00	......	......	......	12.00	1.00	......	......	40
	The Bowker Fertilizer Co., Boston, Mass.	Found	1.00	2 50	11.97	11 97	1.46	44	13.43	1.31	1 37	16 28	
43	**Lake Erie Fish Guano**	Claimed	2.00	......	10.00	......	1.00	......	......	1.00	......	......	43
	The Jarecki Chemical Co., Sandusky, O	Found	2.25	5 62	9.51	9 51	3 19	96	12.70	1.50	1 58	17 67	
44	**O. K. Fertilizer**	Claimed	0.50	......	6.00	......	1.00	......	......	0.50	......	......	44
	The Jarecki Chemical Co., Sandusky, O	Found	0.90	2 25	8.70	8 70	1.59	48	10.29	*0.62	71	12 14	
45	**No. 1 Fish Guano**	Claimed	1.00	......	10.00	......	1.00	......	......	1.00	......	......	45
	The Jarecki Chemical Co., Sandusky, O	Found	0.90	2 25	11.20	11.20	1.72	52	12.92	1.83	1 92	15 89	
46	**Homestead a Bone Black Fertilizer**	Claimed	2.75	......	9.00	......	......	......	......	1.75	......	......	46
	Michigan Carbon Works, Detroit, Mich.	Found	3.05	7 63	9.76	9 76	0.62	19	10.38	2.08	2 18	19 76	
48	**Red Line Complete Manure**	Claimed	1.25	......	8.00	......	......	......	9.00	1.50	......	......	48
	Michigan Carbon Works, Detroit, Mich.	Found	1.40	3 50	8.68	8 68	1.68	50	10.36	1.69	1 77	14 45	
51	**Corn, Oats and Wheat Fish Guano**	Claimed	1.50	......	9.00	......	1.00	......	10.00	2.00	......	......	51
	The Ohio Farmers' Fertilizer Co., Columbus, O	Found	1.40	3 50	10.36	10 36	1.15	35	11.51	*1.87	2 15	16 36	
56	**Potato and Truck Fertilizer**	Claimed	3.00	......	8.00	......	1.00	......	9.00	4.00	......	......	56
	The Ohio Farmers' Fertilizer Co., Columbus, O	Found	2.60	6 50	9.72	9 72	1.85	56	11.57	*3.80	4 37	21 15	
58	**Bone and Potash**	Claimed	2.00	......	8.00	......	2.00	......	10.00	4.00	......	......	58
	The Jones Fertilizing Co., Cincinnati, O.	Found	2.55	6 38	6.90	6 90	†3.00	1 80	9.90	*4.53	5 21	20 29	
59	**Miami Valley Phosphate**	Claimed	3.00	......	9.00	......	4.00	......	13.00	2 75	......	......	59
	The Jones Fertilizing Co., Cincinnati, O.	Found	4.10	10 25	7.29	7 29	†4 60	2 76	11.89	*2.80	3 22	23 52	
60	**Currie's Soluble Bone**	Claimed	0.50	......	11.50	......	1.50	......	......	2.50	......	......	60
	The Currie Fertilizer Co., Louisville, Ky.	Found	0.70	1 75	11.97	11 97	4.02	1 21	15.99	*1.56	1 79	16 72	

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*From sulphate. †From animal matter.

TABLE I.—MIXED FERTILIZERS, WITH POTASH—Continued.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia.		Phosphoric Acid.					Potash.		Total Value.	Record Number.
					Available.		Insoluble.		Total per cent.				
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.		Per cent.	Value.		
62	**Challenge Corn Grower**	Claimed	2.50	......	8.00	......	2.00	......	10.00	0.54	......	......	
	The Northwestern Fertilizing Co., Chicago, Ill.	Found	2.80	7 00	7.67	7 67	†2.30	1 38	9.97	*1.00	1 15	17 20	62
64	**Globe Bone Dust**	Claimed	1.00	......	8.00	......	1.00	......	10.00	1.00	......	......	
	The Globe Fertilizer Co., Louisville, Ky.	Found	1.65	4 12	11.06	11 06	0.77	23	11.83	*1.12	1 29	16 70	64
65	**Big Four Phosphate**	Claimed	1.00	......	8.00	......	1.00	......	9 00	1.00	......	......	
	The Globe Fertilizer Co., Louisville, Ky.	Found	1.75	4 38	9.07	9 07	1.02	31	10.09	*0.71	82	14 58	65
66	**Niagara Phosphate**	Claimed	1.00	......	7.00	......	1.00	......	8.00	1.08	......	......	
	The Bradley Fertilizer Co., Boston, Mass	Found	1.00	2 50	6.52	6 52	3.13	94	9.65	1.31	1 37	11 33	66
69	**Superphosphate**	Claimed	3.00	......	8.00	......	2.00	......	10.00	2.00	......	......	
	Swift and Company, Chicago, Ill.	Found	2.70	6 75	7.23	7 23	†9.08	5 45	16.31	*2.03	2 33	21 76	69
70	**Zell's Little Giant**	Claimed	1.00	......	8.00	......	2.00	......	10.00	1.00	......	......	
	The Zell Guano Co., Baltimore, Md.	Found	1.30	3 25	11.44	11 44	1.21	36	12.65	1.45	1 53	16 58	70
72	**Bone and Potash**	Claimed	0.40	......	11.00	......	1.00	......	13.00	1.25	......	......	
	The Globe Fertilizer Co., Louisville, Ky.	Found	0.90	2 25	12.73	12 73	0.32	10	13.05	*1.08	1 24	16 32	72
76	**Improved Superphosphate**	Claimed	1.00	......	10.00	......	2.00	......	12.00	1.00	......	......	
	The I. P. Thomas & Son Co., Philadelphia, Pa.	Found	3.00	7 50	5.43	5 43	5.18	1 55	10.61	3.28	3 44	17 92	76
77	**Normal Bone Phosphate**	Claimed	1.50	......	8.50	......	2.00	......	10.50	1.50	......	......	
	The I. P. Thomas & Son Co., Philadelphia, Pa	Found	1.25	3 12	12.54	12 54	1.40	42	13.94	1.60	1 68	17 76	77

79	**Climax Phosphate**	Claimed	1.50	....	9.00	....	2.00	....	11.00	3.00	......	....	
	Strecker Brothers, Marietta, O.....	Found	2.15	5 38	4.79	4 79	†5.44	3 26	10.23	3.18	3 34	16 77	79
80	**Acme Phosphate**..	Claimed	1.00	....	8.00	......	2.00	... ...	10.00	1.00	......	....	
	Strecker Brothers, Marietta, O.............	Found	1.25	3 12	4.41	4 41	†4.28	2 57	8.69	1.70	1 78	11 88	80
82	**Wheat, Oats and Barley**	Claimed	1.50	... .	8.00	......	1.00	....	9.00	2.00	..... .	....	
	The Milsom Rend. & Fert. Co., Buffalo, N. Y.	Found	1.45	3 62	8.42	8 42	1.58	47	10.00	2.30	2 42	14 93	82
83	**Erie King**....................	Claimed	1.00	....	7.00	.. ...	2.00	.... ..	9.00	2.00	.. ...	..... .	
	The Milsom Rend. & Fert. Co., Buffalo, N. Y.	Found	1.00	2 50	7.10	7 10	0.57	17	7.67	1.97	2 07	11 84	83
85	**Buckeye Ammo. Bone Superphosphate**....	Claimed	3.00	. ... .	9.00	. ...	..... .	.. ..	11.00	1.00	....	.....	
	The Cleveland Dryer Co., Cleveland, O... .	Found	2.65	6 62	8.89	8 89	3.00	90	11.89	0.48	0 50	16 91	85
86	**Ohio Seed Maker with Potash.**	Claimed	1.50	... . .	10.00	. ...	. ....	... .	15.00	2.00	. .....	. .	
	The Cleveland Dryer Co., Cleveland, O......	Found	1.85	4 62	8.41	8 41	2.36	71	11.77	1.45	1 53	15 27	86
90	**Phospho Bone**.........	Claimed	0.75	. ..	10.00	....	....	......	....	1.00	..... .	. . .	
	The Cleveland Dryer Co., Cleveland, O.....	Found	1.00	2 50	9.33	9 33	2.68	80	12.01	1.72	1 80	14 43	90
91	**Potato and General Crop Fertilizer**	Claimed	1.25	. ....	10.00	... ..	......	... ..	11.00	6.00	..... .	......	
	The Cleveland Dryer Co., Cleveland, O......	Found	1.65	4 12	8.70	8 70	2.74	82	11.44	4.86	5 10	18 74	91
92	**Acidulated Bone and Potash**.........	Claimed	1.00	....	10.00	..... .	2.00	....	12.00	1.50	... .	......	
	The Northwestern Fertilizing Co., Chicago, Ill.	Found	1.65	4 12	11.96	11 96	1.21	36	13.17	1.74	2 00	18 44	92
94	**Garden City Super Phosphate**................ ..	Claimed	2.50	. .....	8.00	.. ...	2.00	.. ....	10.00	0.54	.... . .	....	
	The Northwestern Fertilizing Co., Chicago, Ill.	Found	3.50	8 75	9.91	9 91	†2.49	1 49	12.40	*2.10	2.42	22 57	94
96	**General Crop Phosphate**.......	Claimed	1.00	....	7.00	. .....	1.00	. ... .	8.00	1.08	....	. . .	
	The Crocker Fert. & Chem. Co., Buffalo, N. Y.	Found	1.60	4 00	7.35	7 35	1.79	54	9.14	1.31	1 37	13 26	96
97	**Currie's Dissolved Bone**......................	Claimed	1.00	..... .	11.00	......	0.50	.... .	....	2.75	.... ..	......	
	The Currie Fertilizer Co., Louisville, Ky....	Found	1.05	2 62	11.26	11 26	0.44	13	11.70	*2.93	3 37	17 38	97
98	**Urbana Sweepstakes Bone**	Claimed	2.00	....	8.00	..... .	..... .	....	10.00	2.00	....	....	
	The Loudenback Fertilizer Co., Urbana, O..	Found	1.20	3 00	8.56	8 56	0.96	29	9.52	1.28	1 34	13 19	98

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* From sulphate. † From animal matter.

TABLE I.—MIXED FERTILIZERS, WITH POTASH—Continued.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia.		Phosphoric Acid.					Potash.		Total Value.	Record Number.
					Available.		Insoluble.		Total per cent.				
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.		Per cent.	Value.		
99	**Leader**	Claimed	4.00	......	8.00	....	7.00	......	15.00	1.75	......	......	
	McLean, Dahl & Co., Washington C. H., O.	Found	2.50	6 25	9.21	9 21	4.92	1.48	14.13	*2.18	2 51	19.45	99
100	**Ammoniated Dissolved Bone**	Claimed	2.20	......	9.00	....	2.00	......	11.00	1.50	......	......	
	Lister's Agri'tural Chem. Works, Newark, N. J.	Found	2.75	6 88	9.15	9 15	1.59	48	10.74	2.12	2 22	18 73	100
101	**Bowker's Potato and Vegetable Phosphate**	Claimed	3.00	......	8.00	......	......	......	10.00	4.00	......	......	
	The Bowker Fertilizer Co., Boston, Mass.	Found	3.30	8 25	8.68	8 68	3.33	1 00	12.01	3.82	4 01	21 94	101
102	**Armour's Bone, Blood and Potash**	Claimed	4.11	......	8.00	......	1.50	......	10.00	7.00	......	.....	
	The Armour Fertilizer Works, Chicago, Ill.	Found	5.50	13 75	7.47	7 47	†4.73	2 84	12.20	*6.51	7 49	31 55	102
103	**High Grade Tobacco and Potato Special**	Claimed	3.00	......	10.00	......	......	......	12 00	4.00	......	......	
	Jas. McCallum & Co., Dayton, O.	Found	3.25	8 12	10.59	10 59	4.63	1 39	15.22	1.54	1 62	21 72	103
108	**Potato Grower**	Claimed	3.00	......	8.00	......	2.00	......	10.00	2.00	......	....	
	The Northwestern Fertilizing Co., Chicago, Ill.	Found	4.25	10 62	10.37	10 37	†2.74	1 64	13.11	*1.66	1 91	24 54	108
109	**Seeding Down Fertilizer**	Claimed	2.00	......	10.00	......	1.00	......	11.00	2.50	......	......	
	The Ohio Farmers' Fert. Co., Columbus, O.	Found	1.25	3 13	9.13	9 13	4.10	1 23	12.79	2.08	2 18	15 67	109
111	**Q. and L. Ammoniated Phosphate**	Claimed	1.50	......	10.00	......	2.00	......	12.00	1.50	......	......	
	J. W. Hunter, Baltimore, Md.	Found	1.75	4 38	11.50	11 50	1.21	36	12.71	1.60	1 68	17 92	111
113	**Buffalo Guano**	Claimed	1.00	......	8.00	......	1.00	......	9.00	4.00	......	......	
	The Milsom Rend. & Fert. Co., Buffalo, N. Y.	Found	1.20	3 00	8.15	8 15	1.66	50	9.81	3.75	3 94	15 59	113

115	**Buckeye Wheat Grower**	Claimed	1.50	......	......	......	......	......	12.00	1.00	......	......	
	The Bucyrus Fertilizer Co., Bucyrus, O.	Found	1.25	3 12	9.91	9 91	†3.58	2 15	13.49	2.20	2 31	17 49	115
117	**Keystone Bone Phosphate**	Claimed	1.00	......	9.00	......	2.00	......	11.00	1.00	......	......	
	S. M. Hess & Bro., Philadelphia, Pa.	Found	1.20	3 00	10.80	10 80	1.66	50	12.46	1.31	1 37	15 67	117
119	**Ohio Special Potato Grower**	Claimed	2.00	......	8.00	......	1.00	......	9.00	2.00	......	......	
	S. M. Hess & Bro., Philadelphia, Pa.	Found	2.05	5 12	9.46	9 46	1.79	54	11.25	2.04	2 14	17 26	119
122	**Kangaroo Komplete Kompound**	Claimed	2.00	......	8.00	......	3.50	......	11.50	3.00	......	......	
	Louis F. Detrick, Baltimore, Md.	Found	2.10	5 25	9.46	9 46	1.92	58	11.38	3.10	3 26	18 55	122
126	**Special Corn, Potato and Tobacco Fertilizer**	Claimed	4.00	......	......	......	......	......	12.00	5.00	......	......	
	The E. Rauh & Sons' Fert. Co., Indianapolis, Ind	Found	3.90	9 75	7.03	7 03	†3.84	2 30	10.87	4.72	4 96	24 04	126
127	**Dissolved Bone and Potash**	Claimed	2.00	......	......	......	......	......	12.00	2.00	......	......	
	The E. Rauh & Sons' Fert. Co., Indianapolis, Ind.	Found	3.70	9 25	6.90	6 90	†4.41	2 65	11.31	1.50	1 58	20 38	127
128	**Soluble Bone**	Claimed	1.00	......	......	......	......	......	10.00	1.00	......	......	
	The E. Rauh & Sons' Fert. Co., Indianapolis, Ind	Found	1.40	3 50	8.96	8 96	6.07	1 82	15.03	0.33	35	14 63	128
129	**Currie's Special for Corn and Oats**	Claimed	1.25	......	10.00	......	0 50	......	......	3.00	......	......	
	The Currie Fertilizer Co., Louisville, Ky.	Found	0.90	2 25	8.70	8 70	0.44	13	9.14	*2.33	2 68	13 76	129
132	**Ontario Fish Guano and Potash**	Claimed	2.00	......	9.00	......	2.00	......	11.00	1.50	......	......	
	The Walton Fertilizer Co., Warren, O.	Found	2.25	5 62	11.95	11 95	0.57	17	12.52	1.77	1 86	19 60	132
133	**German Truck and Potato Manure**	Claimed	3.00	......	10.00	......	2.00	......	12 00	4.00	......	......	
	The Walton Fertilizer Co., Warren, O.	Found	2.85	7 12	11.32	11 32	1.66	50	12.98	3.76	3 95	22 89	133
134	**Bowker's Sure Crop Phosphate**	Claimed	1.00	......	8.00	......	......	......	10 00	2.00	......	......	
	The Bowker Fertilizer Co., Boston, Mass.	Found	1.05	2 62	10:35	10 35	1.92	58	12.27	2.14	2 24	15 79	134
136	**Bowker's Ammoniated Dissolved Bone**	Claimed	1.50	......	8.00	......	......	......	10.00	1.00	......	......	
	The Bowker Fertilizer Co., Boston, Mass.	Found	1.60	4 00	9.97	9 97	1.98	59	11.95	1.00	1 05	15 61	136
139	**Iron City**	Claimed	3.00	......	9.00	......	1.00	......	10.00	2.00	......	......	
	The American Reduction Co., Pittsburg, Pa.	Found	2.75	6 88	9.66	9 66	†1.53	92	11.19	*3.01	3 46	20 92	139

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*From sulphate. †From animal matter.

TABLE I.—MIXED FERTILIZERS, WITH POTASH—Continued.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia.		Phosphoric acid.					Potash.		Total Value.	Record Number.
					Available.		Insoluble.		Total per cent.				
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.		Per cent.	Value.		
140	**Common Sense**	Claimed	2.00	.....	6.00	......	......	......	6.00	1.00	......	......	
	The American Reduction Co., Pittsburg, Pa..	Found	2.45	6 12	6.52	6 52	1.15	35	7.67	0.96	1 01	14 00	140
141	**Vegetable Manure**	Claimed	3.00	......	6.00	......	1.00	......	7.00	6.00	......	......	
	The American Reduction Co., Pittsburg, Pa..	Found	3.90	9 75	5.30	5 30	†0.64	38	5.94	*6.15	7 07	22 50	141
143	**Corn Grower**	Claimed	2.00	......	......	......	......	......	11.00	2.00	......	......	
	F. Herrick, (suc. Herrick, Harris & Co.,) Clev'l'd, O	Found	1.70	4 25	9.59	9 59	2.87	86	12.46	2.10	2 20	16 90	143
145	**Special Potato Bone and Potash**	Claimed	2.00	......	......	......	......	......	13.00	3.00	......	......	
	F. Herrick, (suc. Herrick, Harris & Co.,) Clev'l'd, O	Found	1.90	4 75	10.09	10 09	1.92	58	12.01	5.03	5 28	20 70	145
146	**Potato Manure**	Claimed	2.50	......	8.00	......	1.00	......	9.00	3.25	......	......	
	M. E. Wheeler & Co., Rutland, Vt......	Found	1.50	3 75	10.28	10 28	1.79	54	12.07	3.49	3 66	18 23	146
147	**Vegetable Bone Fertilizer**	Claimed	5.00	......	8.00	......	1.00	......	9.00	5.00	......	......	
	The Milsom Rend. & Fert. Co., Buffalo, N. Y.	Found	5.20	13 00	8.44	8 44	1.08	32	9.52	4.93	5 17	26 93	147
150	**Potato, Tobacco and Hop Fertilizer**	Claimed	2.00	......	8.00	......	1.00	......	9.00	2.70	......	......	
	The Niagara Fertilizer Works. Buffalo, N. Y..	Found	2.00	5 00	9.07	9 07	0.77	23	9.84	2.47	2 59	16 89	150
151	**Wheat and Corn Producer**	Claimed	1.50	......	8.00	......	1.00	......	9.00	2.16	......	......	
	The Niagara Fertilizer Works, Buffalo, N. Y..	Found	1.85	4 62	7.61	7 61	1.98	59	9.59	2.24	2 35	15 17	151
153	**Ammoniated Superphosphate**	Claimed	1.00	......	8.00	......	1.00	......	9.00	1.00	......	......	
	The Rasin Fertilizer Co., Baltimore, Md...	Found	1.45	3 62	10.35	10 35	0.96	29	11.31	1.31	1 37	15 63	153

154	**Standard Ammoniated Dissolved Bone**	Claimed	2.00	.....	9.00	.....	1.00	.....	10.00	2.00	.....	.....	
	The Standard Fertilizer Co., Boston, Mass.	Found	2.20	5 50	8.96	8 96	2.68	80	11.64	2.70	2 84	18 10	154
155	**Standard Guano**	Claimed	1.25	.....	8.00	.....	2.00	.....	10.00	2.00	.....	.....	
	The Standard Fertilizer Co., Boston, Mass.	Found	1.60	4 00	8.88	8 88	3.19	96	12.07	1.47	1 55	15 39	155
156	**Standard A Brand**	Claimed	1.00	.....	7.00	.....	2.00	.....	9.00	1.00	.....	.....	
	The Standard Fertilizer Co., Boston, Mass	Found	1.55	3 88	9.46	9 46	1.98	59	11.44	6 51	6 83	20 76	156
157	**Standard Potato Special**	Claimed	1.25	.....	8.00	.....	2.00	.....	10.00	3.00	.....	.....	
	The Standard Fertilizer Co., Boston, Mass.	Found	1.65	4 12	9.02	9 02	2.87	86	11.89	4.82	5 06	19 06	157
160	**Fish and Potash, Potato and Tobacco Food.**	Claimed	1.00	.....	9.00	.....	1.00	.....	.....	4.00	.....	.....	
	The Jarecki Chemical Co., Sandusky, O.	Found	1.85	4 62	8.70	8 70	1.08	32	9.78	6.16	6 47	20 11	160
164	**Buffalo Fertilizer**	Claimed	2.25	.....	8.00	.....	1.00	.....	9.00	1.50	.....	.....	
	The Milsom Rend. & Fert. Co., Buffalo, N. Y	Found	2.05	5 12	8.26	8 26	1.46	44	9.72	1.54	1 62	15 44	164
170	**Fish and Potash Grain Special**	Claimed	1.50	.....	9.00	.....	1.00	.....	.....	4.00	.....	.....	
	The Jarecki Chemical Co., Sandusky, O.	Found	1.60	4 00	9.78	9 78	2.36	71	12.14	4.30	4 52	19 01	170
172	**Soluble Sea Island Guano**	Claimed	2.43	.....	8.00	.....	1.00	.....	9.00	1.50	.....	.....	
	The Rasin Fertilizer Co., Baltimore, Md.	Found	2.75	6 88	8.13	8 13	2.87	86	11.00	1.72	1 80	17 67	172
173	**Jarves Drill Phosphate**	Claimed	1.25	.....	8.00	.....	.....	.....	10.00	0.75	.....	.....	
	The Michigan Carbon Works, Detroit, Mich.	Found	1.75	4 38	8.31	8 31	1 34	40	9 65	1.25	1 31	14 40	173
175	**Circle Brand, Ground Bone with Potash**	Claimed	2.25	.....	6.00	.....	4.00	.....	10.00	2.00	.....	.....	
	The Bradley Fertilizer Co., Boston, Mass.	Found	3.35	8 38	9.21	9 21	†6.78	4 07	15.99	0.62	65	22 31	175
176	**Potato and Root Phosphate**	Claimed	1.25	.....	8.00	.....	2.00	.....	10.00	3.00	.....	.....	
	The Bradley Fertilizer Co., Boston, Mass.	Found	1.60	4 00	9.14	9 14	3.13	94	12.27	1.60	1 68	15 76	176
177	**Prolific Crop Producer**	Claimed	1.00	.....	6.00	.....	1.00	.....	7.00	1.00	.....	.....	
	The Williams & Clark Fert.Co., New York, N.Y.	Found	1.35	3 38	7.55	7 55	2.74	82	10.29	1.39	1 46	13 21	177
182	**Big Four**	Claimed	5.00	.....	.....	.....	.....	.....	12.00	3.00	.....	.....	
	Nelson Morris & Co., Chicago, Ill.	Found	4.45	11 12	3.83	3 83	†8.42	5 05	11.25	2.12	2 22	22 22	182

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* From sulphate. † From animal matter.

TABLE I.—MIXED FERTILIZERS, WITH POTASH—Continued.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia.		Phosphoric Acid.					Potash.		Total Value.	Record Number.
					Available.		Insoluble.		Total per cent.				
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.		Per cent.	Value.		
183	**Potato, Hop and Tobacco**	Claimed	2.50		8.00		1.00		9.00	4.00			
	The Milsom Rend. & Fert. Co., Buffalo, N. Y	Found	2.28	5 70	7.77	7 77	1.53	46	9.30	4.08	4 28	18 21	183
184	**Universal Fertilizer**	Claimed	1.00		8.00		1.00			5.00			
	The Packers' Union Fert. Co., New York, N. Y.	Found	1.10	2 75	7.85	7 85	0.90	27	8.75	4.51	4 73	15 60	184
185	**Animal Corn Fertilizer**	Claimed	3.00		8.00		1.00			2.00			
	The Packers' Union Fert. Co., New York, N. Y.	Found	2.70	6 75	8.11	8 11	0.90	27	9.01	2.55	2 68	17.81	185
186	**Ammoniated Dissolved Bone**	Claimed	3.00		10.00		2.00		12.00	2.00			
	Jas. McCallum & Co , Dayton. O.	Found	2.85	7 12	11.13	11 13	3.96	1 19	15.09	2.33	2 45	21 89	186
187	**Spot Cash**	Claimed	2.00		10 00				12.00	2.00			
	Jas. McCallum & Co., Dayton, O.	Found	2.10	5 25	12.54	12 54	3.64	1 09	16.18	1.99	2 09	20 97	187
188	**Miami**	Claimed	1.00		12.00				14.00	1.00			
	Jas. McCallum & Co., Dayton, O.	Found	1.10	2 75	12.92	12 92	3.20	96	16 12	0.95	1 00	17 63	188
189	**Great Eastern English Wheat Grower**	Claimed	1.00		8.00		1 00		9.00	2.00			
	The Great Eastern Fert. Co., Rutland, Vt.	Found	1.05	2 62	8.89	8 89	1.66	50	10.55	1.93	2 03	14 04	189
191	**Corn Fertilizer**	Claimed	2.00		8.00		1.00		9.00	2 00			
	M. E. Wheeler, & Co., Rutland, Vt.	Found	1.90	4 75	8.95	8 95	2.43	73	11.38	2.53	2 65	17.08	191
192	**Royal Wheat Grower**	Claimed	1.00		8.00		1 00		9.00	2.00			
	M. E. Wheeler & Co., Rutland, Vt.	Found	1.10	2 75	9.21	9 21	1.53	46	10.74	2.39	2 51	14 93	192

195	**Homestead Potato Grower**	Claimed	2.35	......	8.50	......	0.50	......	10.00	5.00	......	......	
	The Michigan Carbon Works, Detroit, Mich.	Found	2.65	6 62	9.27	9 27	0.70	21	9.97	5.03	5 28	21 38	195
196	**Ohio Farmers' Bone Super Phosphate**	Claimed	1.50	......	9.00	......	......	......	12.00	1.00	......	......	
	The Western Union Chem. Co., Cleveland, O.	Found	1.45	3 62	9.08	9 08	4.35	1 31	13.43	1.43	1 50	15 51	196
198	**Union Potato and Tobacco Fertilizer**	Claimed	1.50	......	8.00	......	......	......	11.00	4.00	......	......	
	The Western Union Chem. Co., Cleveland, O.	Found	1.90	4 75	7.62	7 62	2.74	82	10.36	5.30	5 56	18 75	198
199	**D. B. Sea Fowl Guano**	Claimed	2.50	......	8.00	......	2.00	......	10.00	1.50	......	......	
	The Bradley Fertilizer Co., Boston, Mass.	Found	2.10	5 25	8.77	8 77	1.72	52	10.49	1.76	1 85	16 39	199
200	**Dissolved Bone with Potash**	Claimed	1.00	......	8.00	......	2.00	......	10.00	2.15	......	......	
	The Bradley Fertilizer Co., Boston, Mass.	Found	1.40	3 50	8.05	8 05	2.62	79	10.67	1.29	1 35	13 69	200
202	**Buncombe Fertilizer**	Claimed	2.90	......	14.21	......	9.59	......	23.80	0.35	......	......	
	Richard Stephens & Co., Ashtabula, O.	Found	2.50	6 25	13.12	13 12	†13.11	7 87	26.23	0.23	24	27 48	202
204	**International Grain and Grass Fertilizer**	Claimed	2.00	......	10.00	......	1.00	......	11.00	2.00	......	......	
	The International Seed Co., Rochester, N. Y.	Found	2.65	6 62	9.71	9 71	2.81	84	12.52	2.47	2 59	19 76	204
205	**Bowker's Special Onion Fert. or 10 Per cent. Manure.**	Claimed	1.00	......	6.00	......	......	......	7.00	10.00	......	......	
	The Bowker Fertilizer Co., Boston, Mass	Found	1.15	2 88	7.80	7 80	1.08	32	8.88	8.73	9 17	20 17	205
206	**Royal Bone Phosphate**	Claimed	1.25	......	7.00	......	1.00	......	8.00	2.00	......	......	
	The Williams & Clark Fert. Co., New York, N.Y.	Found	0.90	2 25	8.75	8 75	2.05	62	10.80	2.74	2 88	14 50	206
207	**Corn Fertilizer**	Claimed	3.00	......	8.00	......	1.00	......	9.00	2.00	......	......	
	The Milsom Rend. & Fert. Co., Buffalo, N. Y.	Found	2.80	7 00	8.31	8 31	3.00	90	11.31	1.76	1 85	18 06	207
209	**Lawrence's Wheat Special**	Claimed	2.50	......	10.00	......	1.00	......	11.00	1.50	......	......	
	The Royal Fertilizer Co., Cleveland, O.	Found	2.75	6 88	8.57	8 57	3.07	92	11.64	0.50	52	16 89	209
210	**P. A. P. for Potatoes and Truck**	Claimed	1.00	......	10.00	......	1.50	......	11.50	1.25	......	......	
	The Royal Fertilizer Co., Cleveland, O.	Found	1.55	3 88	9.53	9 53	3.58	1 07	13.11	1.23	1 29	15.77	210
213	**Ammoniated Bone Super Phosphate**	Claimed	2.00	......	8.00	......	1.00	......	9.00	2.00	......	......	
	S M. Hess & Bro., Philadelphia, Pa.	Found	2.10	5 25	7.36	7 36	2.23	67	9.59	2.18	2 29	15 57	213

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*From sulphate. †From animal matter.

TABLE I.—MIXED FERTILIZERS, WITH POTASH—Continued.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia.		Phosphoric acid.					Potash.		Total Value.	Record Number.
					Available.		Insoluble.		Total per cent.				
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.		Per cent.	Value.		
216	**Forest City Ammo. Bone Super Phosphate**........	Claimed	3.00	.....	9.00	....	...	....	11.00	1.00	....	......	
	The Cleveland Dryer Co., Cleveland, O.......	Found	2.50	6 25	7.99	7 99	2.68	80	10.67	1.10	1 16	16 20	216
220	**American Wheat and Rye Grower**................	Claimed	1.00	......	8.00	......	1.00	.....	....	2.00	......	......	
	The Packers' Union Fert. Co., New York, N. Y.	Found	1.25	3 12	6.96	6 96	2.05	62	9.01	2.01	2 11	12 81	220
221	**Potato Manure**.......	Claimed	2.50	....	8.00	......	1.00	....	......	6.00	....	... ...	
	The Packers' Union Fert. Co., New York, N. Y.	Found	2.25	5 62	6.27	6 27	1.40	42	7.67	6.01	6 31	18 62	221
223	**Valley Phosphate**.....	Claimed	4.00	.....	6.00	....	2.00	....	9.00	1.50	......	......	
	J. L. & H. Stadler, Cleveland, O..	Found	3.05	7 62	6.84	6 84	1.85	56	8.69	1.95	2 05	17 07	223
225	**New Rival Ammoniated Superphosphate**....	Claimed	1.50	......	10.00	.....	1.00	....	11.00	1.60	....	...	
	The Crocker Fert. & Chem. Co., Buffalo, N. Y.	Found	1.75	4 38	11.56	11 56	1.15	35	12.71	1.60	1 68	17 97	225
226	**Special Potato Manure**....	Claimed	4.50	....	8.00	.....	1.00	....	9.00	5.40	....	......	
	The Crocker Fert. & Chem. Co., Buffalo, N. Y.	Found	4.65	11 62	7.99	7 99	0.32	10	8.31	5.07	5 33	25 04	226
227	**Universal Grain Grower**..	Claimed	1.00	....	7.00	.....	1.00	....	8.00	2.70	. .	....	
	The Crocker Fert. & Chem. Co., Buffalo, N. Y.	Found	0.90	2.25	6.97	6 97	1.08	32	8.05	3.12	3.28	12 82	227
228	**Complete Bone Black Fertilizer**..	Claimed	2.25	......	8.00	....	1.00	....	9.00	1.62	......	... ...	
	The Crocker Fert. & Chem. Co., Buffalo, N. Y.	Found	2.45	6 12	9.02	9 02	0.70	21	9.72	1.62	1 70	17 05	228
229	**Stevens' Special Wheat and Corn**...............	Claimed	2.00	....	8.00	......	1.00	....	9.00	2.16	......	....	
	The Crocker Fert. & Chem. Co., Buffalo, N. Y.	Found	2.15	5 38	9.98	9 98	0.57	17	10.55	2.58	2 71	18 24	229

230	**I.P.Felch Buffalo Fert.for Wheat,Oats and Buckwheat.**	Claimed	1.50	....	9.00	... ...	1.00	....	10.00	2.16	....	....	
	The Crocker Fert. & Chem. Co., Buffalo, N. Y.	Found	2.05	5 12	9.01	9 01	0.96	29	9.97	2.39	2 51	16 93	230
232	**Atlas**	Claimed	2.00	....	8.00	.... .	0.50	.... ..	8.60	2.35	. .....	. .....	
	The Springfield Fertilizer Co., Springfield, O.	Found	1.95	4.88	9.21	9 21	1.66	50	10.87	2.58	2 71	17 30	232
233	**Baker's Special W, C. & G. Mixture**............	Claimed	1.00	... ...	9.00	....	1.00	. .....	10.00	2.00	..... .	......	
	The Chemical Co. of Canton, Baltimore, Md..	Found	1.10	2 75	8.63	8 63	1.79	54	10.42	2.39	2 51	14 43	233
237	**Corn and Potato Fertilizer**......................	Claimed	2.00	....	9.00	..... .	2.00	......	12.00	3.00	... . .	....	
	The Pittsburg Provision Co., Pittsburg, Pa...	Found	2.20	5 50	6.78	6 78	†4.79	2 87	11 57	*2.95	3 39	18 54	237
238	**Western Reserve Fertilizer**...	Claimed	2.50	.... ..	8.00	....	....	......	10.00	2.00	....	.... ..	
	The Newburgh Fertilizer Co., Cleveland, O...	Found	1.50	3 75	9.21	9 21	1.34	40	10.55	1.45	1 53	14 89	238
240	**Bone and Meat**.................................	Claimed	3.00	....	.. .	......	....	. ....	10.00	1.50	....	.... .	
	The Canton Fertilizer Co., Canton, O.........	Found	2.30	5 75	6.90	6 90	†3.77	2 26	10.67	2.57	2 70	17 61	240
241	**Peerless Bone Phosphate**...	Claimed	2.00	.. .	....	..... .	..... .	....	8.00	0.50	... . .	....	
	The Canton Fertilizer Co., Canton, O.........	Found	1.15	2 88	7.10	7 10	†1.53	92	8.63	1.29	1 35	12 25	241
242	**Standard Phosphate**....	Claimed	1.50	....	9.00	.. ....	1.00	... .:.	10.00	2.00	.....	.... .	
	The Farmers' Union Fert.Works, Buffalo, N.Y.	Found	1.60	4 00	9.47	9 47	1.66	50	11.13	2.10	2 20	16 17	242
243	**Club and Grange Formula**.......	Claimed	1.00	....	8 00	.... .	1.00	....	9.00	1.08	.. ....	....	
	The Farmers' Union Fert. Works, Buffalo, N. Y.	Found	1.40	3 50	9 02	9 02	1.34	40	10.36	1.06	1 12	14 04	243
244	**Good Grower Potato Phosphate**.............	Claimed	1.50	....	6.00	.. ....	1.00	....	7.00	5.00	....	....	
	The Williams & Clark Fert. Co., New York, N.Y.	Found	1.55	3 88	7.86	7 86	3.84	1 15	11.70	2.64	2 77	15 66	244
245	**Vegetable Bone Superphosphate**.....	Claimed	6.00	......	6.00	....	1.00	....	7.00	6.00	....	......	
	The Crocker Fert. & Chem Co., Buffalo, N. Y.	Found	6.55	16 38	6.21	6 21	0.57	17	6.78	6.01	6 31	29 07	245
252	**Homestead Tobacco Grower**	Claimed	3.50	....	10.00	....	0.50	......	......	3.50	.... .	..... .	
	Michigan Carbon Works, Detroit, Mich	Found	4.00	10 00	9.27	9 27	0.06	02	9.33	3.93	4 13	23 42	252
253	**Nobsque Guano**..........................	Claimed	1.40	....	8.00	. .....	1.00	....	9.00	2.00	..... .	....	
	The Pacific Guano Co., Boston, Mass.........	Found	2.00	5 00	7.67	7 67	2.62	79	10.29	1.16	1 22	14 68	253

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*From sulphate. †From animal matter.

TABLE I.—MIXED FERTILIZERS, WITH POTASH—Continued.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia.		Phosphoric Acid.					Potash.		Total Value.	Record Number.
					Available.		Insoluble.		Total per cent.				
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.		Per cent.	Value.		
254	**A No. 1 Phosphate**....	Claimed	1.25	......	7.00	......	1.00	......	8.00	1.50	......	......	
	The Pacific Guano Co., Boston, Mass.........	Found	1.70	4 25	8.05	8 05	1.98	59	10.03	1.68	1 76	14 65	254
256	**Farmers' Bone Phosphate.**	Claimed	1.00	......	10.00	......	2.00	......	12.00	1.00	......	......	
	The Southeastern Fertilizer Co., Cleveland, O	Found	1.05	2 62	9.08	9 08	2.87	86	11.95	1.50	1 58	14 14	256
259	**Game Guano**........	Claimed	2.50	......	9.00	......	1.00	......	10.00	2.50	......	......	
	The Baltimore Guano Co., Baltimore, Md....	Found	3.00	7 50	8.77	8 77	2.23	67	11.00	2.10	2 20	19 14	259
264	**Big Three**.....	Claimed	3.00	......	......	......	......	......	10.00	2.00	......	......	
	Nelson Morris & Co., Chicago, Ill....	Found	5.75	14 38	5.94	5 94	†7.42	4 45	13.36	1.35	1 42	26 19	264
265	**Grain and Grass Grower**.......	Claimed	1.00	......	7.00	......	1.00	......	8.00	1.08	......	......	
	The Niagara Fertilizer Works, Buffalo, N. Y.	Found	1.40	3 50	7.93	7 93	1.85	56	9.78	1.06	1 12	13 11	265
268	**Wheat and Grass Grower.**	Claimed	1.00	......	10.00	......	2.00	......	12 00	1.00	......	......	
	The Walton Fertilizer Co., Warren, O........	Found	1.55	3 88	13.12	13 12	0.44	13	13.56	1.31	1 37	18 50	268
269	**Hercules Meat and Bone Phosphate**............	Claimed	2.55	......	0.95	......	0.13	......	1.08	2.82	......	......	
	Geo. Wagner, Sandusky, O	Found	1.80	4 50	0.83	83	0.13	04	0.96	1.25	1 31	6 68	269
271	**Rickard's Animal Bone Phosphate**.......	Claimed	3.00	......	10.00	......	1.00	......	11.00	3.24	......	......	
	G. W. Rickard, Medina, O.................	Found	3.10	7 75	10.99	10 99	1.21	36	12.20	3.24	3 40	22.50	271
275	**Scientific Corn and Grain Fertilizer**.......	Claimed	2.00	......	7.50	......	1.50	......	9.00	2.00	......	......	
	Ths Scientific Fertilizer Co., Pittsburg, Pa...	Found	2.20	5 50	7.29	7 29	2.43	73	9.72	1.77	1 86	15 38	275

276	**Standard**	Claimed	3.00		10.00				11.00	1.62			
	The Oakfield Fertilizer Co., Buffalo, N. Y.	Found	3.10	7 75	10.05	10 05	1.08	32	11.13	1.95	2 05	20 17	276
277	**High Farming**	Claimed	2.00		8.00				9.00	2.45			
	The Oakfield Fertilizer Co., Buffalo, N. Y.	Found	2 35	5 88	7.67	7 67	1.21	36	8.88	2.62	2 75	16 66	277
278	**Domestic**	Claimed	2.00		8.00				9.00	1.08			
	The Oakfield Fertilizer Co., Buffalo, N. Y.	Found	2.05	5 12	7.35	7 35	1.66	50	9.01	1.52	1 60	14 57	278
279	**Golden Sheaf**	Claimed	1.50		7.00				8.00	1.90			
	The Oakfield Fertilizer Co., Buffalo, N. Y.	Found	1.70	4 25	7.23	7 23	1.08	32	8.31	2.31	2 43	14 23	279
280	**Great Value**	Claimed	1.00		6.00				7.00	1.08			
	The Oakfield Fertilizer Co., Buffalo, N. Y.	Found	1.25	3 12	7.35	7 35	0.38	11	7.73	1 50	1 58	12 16	280
281	**Potato and Tobacco**	Claimed	3.00		6.00				7.00	4.32			
	The Oakfield Fertilizer Co., Buffalo, N. Y.	Found	3.40	8 50	5.96	5 96	1.34	40	7.30	4.26	4 48	19 34	281
283	**Night Soil Guano**	Claimed											
	The Youngstown Fert. Co., Youngstown, O.	Found	3.30	8 25	1.60	1 60	†0.38	23	1.98	0.39	41	10 49	283
284	**Try Me Bone Phosphate**	Claimed	2.00		8.00		2.00		10.00	1.00			
	Josiah Cope & Co., Lincoln University, Pa.	Found	2 30	5 75	9.85	9 85	1.53	46	11.38	4.43	4 65	20 71	284
285	**Ammoniated Bone Phosphate**	Claimed	1.00		8.00		1.00		10.00	1.00			
	Josiah Cope & Co., Lincoln Uuiversity, Pa.	Found	1.15	2 88	9.33	9 33	2.11	63	11.44	3.57	3 75	16 59	285
294	**Hamm's Special**	Claimed	3.00		10.00		5.00		15.00	2.00			
	The M. Hamm Co., Washington C. H., O.	Found	4.15	10 38	9.34	9 34	3.58	1 07	12.92	3.05	3 21	24 00	294
299	**Favorite**	Claimed	2.00		8.00		3.00		11.00	1.50			
	The Marietta Bone & Phos. Co., Marietta, O.	Found	0.50	1 25	5.11	5 11	†3.46	2 08	8.57	0.46	48	8 92	299
300	**Dissolved Bone**	Claimed	2.00		8.00		2.00		10.00	1.50			
	The Marietta Bone & Phos. Co., Marietta, O.	Found	1.60	4 00	4.54	4 54	†3.07	1 84	7.61	0.95	1 00	11 38	300
301	**Hustler**	Claimed	2.00		7.00		6.00		12.00	0.50			
	The Marietta Bone & Phos. Co., Marietta, O.	Found	0.60	1 50	4.92	4 92	†3.71	2 23	8.63	0.39	41	9 06	301

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*From sulphate. †From animal matter.

TABLE I.—MIXED FERTILIZERS, WITH POTASH—Continued.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia.		Phosphoric acid.					Potash.		Total Value.	Record Number.
					Available.		Insoluble.		Total per cent.				
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.		Per cent.	Value.		
305	**Homestead Vegetable Grower**	Claimed	5.50	......	5.00	.....	......	....	6.00	6.50	....	......	
	Michigan Carbon Works, Detroit, Mich	Found	6.50	16 25	6.26	6 26	†0.32	19	6.58	6.22	6 53	29 23	305
308	**Potomac Complete Manure**	Claimed	2.00	.....	9.00	......	1.00	.....	10.00	0.92	....	......	
	The Potomac Fertilizer Co., Baltimore, Md.	Found	0.25	62	12.03	12 03	3.00	90	15.03	0.15	16	13 71	308
311	**Progress Corn and Wheat Grower**	Claimed	2.00	......	8.00	......	1.00	......	10.00	1.00	....	.....	
	The Globe Fertilizer Co., Louisville, Ky.	Found	2.10	5 25	9.14	9 14	1.15	35	10.29	0.64	67	15 41	311
313	**Standard UNXLD Fertilizer**	Claimed	2.25	......	8.00	....	....	....	.....	2.25	......	....	
	H. J. Baker & Bro., 93 William St., New York, N.Y.	Found	2.75	6 88	9.01	9 01	0.83	25	9.84	2.70	2 84	18 98	313
315	**Soluble Bone and Potash**	Claimed	2.50	......	3.00	....	8.00	....	11.00	1.00	......	.....	
	S. Kaufman & Sons, Indianapolis, Ind.	Found	1.20	3 00	6.97	6 97	2.87	86	9.84	0.48	50	11 33	315
317	**Quinnipiac Climax Phosphate**	Claimed	1.25	......	8.00	....	1.00	....	9.00	2.00	....	......	
	The Quinnipiac Co., New York, N. Y	Found	1.40	3.50	7.62	7 62	3.25	98	10.87	2.45	2 57	14 67	317
319	**Urbana Bone Phosphate and Potash**	Claimed	1.50	......	9.00	......	....	....	10.00	1.00	....	....	
	The Loudenback Fertilizer Co., Urbana, O.	Found	0.10	25	14.91	14 91	1.59	48	16.50	0.21	22	15 86	319
320	**Urbana Animal Tankage and Guano No. 1**	Claimed	1.00	......	8.00	....	....	.....	10.00	1.00	....	....	
	The Loudenback Fertilizer Co.. Urbana, O.	Found	0.30	75	9.58	9 58	2.43	73	12.01	0.96	1 01	12 07	320
322	**Urbana Ammoniated Bone**	Claimed	2.50	......	10 00	....	....	....	12.00	3.00	....	.....	
	The Loudenback Fertilizer Co., Urbana, O.	Found	0.85	2 12	8.76	8 76	3.25	98	12.01	1.52	1 60	13 46	322

323	**Tobacco and Potato Fertilizer**..................	Claimed	4.00	... .	9.00	.....	3.00	......	12.00	5.00	......	...	
	Geo.S.Bartlett,(suc.TheCin'tiDesc.Co.)Cin'ti,O	Found	4.20	10 50	8.50	8 50	†3.96	2 38	12.46	4.66	4 90	26 28	323
324	**Schroth's Special**.......	Claimed	2.00	....	7 00	. .. .	3.00	. ....	10.00	1.00	......	....	
	The J. & F. Schroth Packing Co., Cincinnati, O	Found	2.65	6 62	6.64	6 64	†5.50	3 30	12.14	1.37	1 44	18 00	324
329	**Ammoniated Wheat and Corn Phosphate**..........	Claimed	2.50	....	10.00	....	1.00	......	11.00	1.60	....	... ..	
	The Crocker Fert. & Chem. Co., Buffalo, N. Y.	Found	2.70	6 75	10.30	10 30	1.53	46	11.83	1.72	1 80	19 31	329
331	**Ammoniated Practical Phosphate**................	Claimed	1.00	......	8.00	.. ...	1.00	..... .	9.00	1.08	... ..	... ..	
	The Crocker Fert. & Chem. Co., Buffalo, N. Y.	Found	1.55	3 88	9.34	9 34	1.08	32	10.42	1.58	1 66	15 20	331
333	**Critchfield's Boneine**.	Claimed	0.50	....	8.00	......	1.00	....	9.00	1.50	....	..... .	
	The Lazaretto Guano Co., Baltimore, Md....	Found	1.10	2 75	8.89	8 89	1.53	46	10.42	2.10	2 20	14 30	333
334	**Critchfield's Fish Guano**......................	Claimed	1.25	.. ....	10.00	....	1.00	....	11.00	2.50	......	.... .	
	The Lazaretto Guano Co., Baltimore Md.....	Found	1.35	3 38	10.09	10 09	2.05	62	12.14	2.62	2 75	16 84	334
335	**Critchfield's Button Bone Fertilizer**........	Claimed	2.50	....	10.00	. ....	1.00	.... .	11.00	2.50	....	....	
	The Lazaretto Guano Co., Baltimore, Md....	Found	2.55	6 38	9.78	9 78	2.17	65	11.95	2.78	2 92	19 73	335
336	**High Grade Super Phosphate of Bone**............	Claimed	1.50	.... .	9.00	....	2.00	.. . .	11.00	1.00	.. ..	......	
	D. Blocher & Co., Gettysburg, Pa...........	Found	1.55	3 88	10.42	10 42	2.43	73	12.85	1.41	1 48	16 51	336
339	**Capital City Grain and Grass Grower**............	Claimed	1.00	....	10.00	..... .	1.00	.....	11.00	1.00	....	.. . .	
	The Columbus Phosphate Co., Columbus, O..	Found	0.80	2 00	14.45	14 45	2.11	63	16.56	0.33	35	17 43	339
343	**Double Fish Guano**	Claimed	3.00	......	12.00	......	1.00	. .. ..	.....	1.00	. ..	.. ...	
	The Jarecki Chemical Co., Sandusky, O.....	Found	1.95	4 88	13.37	13 37	1.40	42	14.77	0.58	61	19 28	343
344	**Corn and Wheat Grower**..............	Claimed	4.00	. ....	9.00	....	3.00	....	12.00	4.00	.. ...	. .	
	The J. & F. Schroth Packing Co., Cincinnati,O	Found	3.95	9 88	9.21	9 21	†4.22	2 53	13.43	4.41	4 63	26 25	344
345	**Big Four Tobacco Grower**......	Claimed	2.00	....	8.00	....	1.00	....	10 00	2.00	... .	..... .	
	The Globe Fertilizer Co., Louisville, Ky....	Found	2.55	6 38	8.31	8 31	2.36	71	10.67	*2.51	2 89	18 29	345
346	**Eagle Corn and Wheat Grower**......	Claimed	2.00	....	8.00	.. ....	1.00	. .....	10.00	2.00	... ..	. ....	
	The Globe Fertilizer Co., Louisville, Ky.. ..	Found	2.60	6 50	9.47	9 47	1.02	31	10 49	2.43	2 55	18 83	346

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*From sulphate. †From animal matter.

TABLE I.—MIXED FERTILIZERS, WITH POTASH—Continued.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia.		Phosphoric Acid.					Potash.		Total Value.	Record Number.
					Available.		Insoluble.		Total per cent.				
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.		Per cent.	Value.		
350	**Ober's Farmers' Mixture**	Claimed	1.00	......	9.00	....	2.00	...	11.00	2.00	......	......	
	The G. Ober & Sons Co., Baltimore, Md	Found	1.35	3 38	11.12	11 12	1.08	32	12.20	3.57	3 75	18 57	350
352	**Big 5**....	Claimed	3.00	......	......	....	......	....	10.00	1.00	...	......	
	Nelson Morris & Co., Chicago, Ill...	Found	3.70	9 25	5.69	5 69	†5.88	3 53	11.57	0.25	26	18 73	352
353	**Acidulated Bone**.......................... .. .	Claimed	1.00	......	8.00	....	1.00	......	9.00	1.00	.	......	
	The M. Hamm Co., Washington C. H., O....	Found	2.80	7 00	7.99	7 99	1.98	59	9.97	2.61	2 74	18 32	353
357	**Wheat and Grass Special**..........	Claimed	1.00	....	8.00	....	......	.....	....	1.00	......	....	
	Josiah Cope & Co., Lincoln University, Pa...	Found	1.20	3 00	9.01	9 01	1.92	58	10.93	1.39	1 46	14 05	357
358	**Globe**.................	Claimed	2.50	....	10.00	....	0.50	.....	10.50	2.00	......	......	
	The Springfield Fertilizer Co., Springfield, O	Found	2.50	6 25	11.06	11 06	2.11	63	13.17	2.31	2 43	20 37	358
359	**Great Eastern Vegetable, Vine and Tobacco**... .	Claimed	2.50	......	8.00	......	1.00	....	9.00	3.25	.....	......	
	The Great Eastern Fert. Co., Rutland, Vt....	Found	2.25	5 62	9.18	9 18	1.25	38	10.43	3.56	3 74	18 92	359
361	**Reese's Challenge Crop Grower**....	Claimed	1.00	....	8.00	......	1.00	.....	9.00	2.00	......	......	
	John S. Reese & Co., Baltimore, Md.........	Found	1.45	3 62	9.08	9 08	1.53	46	10.61	2.47	2 59	15 75	361
363	**Indian Brand Ohio Valley Phosphate**.............	Claimed	2.00	......	8.00	......	3.00	.....	11.00	2.00	.....	......	
	Geo.S.Bartlett,(suc.TheCin'tiDesc.Co.)Cin'ti,O.	Found	2.35	5 88	7.99	7 99	†3.84	2 30	11.83	2.30	2 42	18 59	363
364	**Indian Brand Gilead Phosphate**........	Claimed	3.00	......	9.00	....	3.00	.....	12.00	2.00	....	......	
	Geo.S.Bartlett,(suc.TheCin'tiDesc.Co.)Cin'ti,O	Found	3.80	9 50	8.39	8 39	†5.17	3 10	13.56	2.37	2 49	23 48	364

370	**Ober's Farmers' Standard Ammoniated Phosphate.**	Claimed	2.00	......	8.00	......	2.75	......	10.75	2.00	......	......	
	The G. Ober & Sons Co., Baltimore, Md.	Found	2.45	6 12	10.80	10 80	0.77	23	11.57	2.06	2 16	19 31	370
372	**Keystone Fertilizer**............	Claimed	2.00	......	9.00	......	2.00	......	12.00	1.50	......	......	
	The Pittsburg Provision Co., Pittsburg, Pa..	Found	1.90	4 75	6.66	6 66	5.17	1 55	11.83	*0.75	86	13 82	372
375	**Bear Beef Blood and Bone**..	Claimed	2.00	......	9.00	......	1.00	......	10.00	2.00	......	......	
	The Continental Fertilizer Co.,Nashville,Tenn	Found	2.30	5 75	10.87	10 87	1.40	42	12.27	1.79	1 88	18 92	375
380	**Potato and Tobacco Grower**.....	Claimed	4.00	......	10.00	......	2.00	......	12.00	5.00	......	......	
	Swift & Company, Chicago, Ill..........	Found	3.85	9 62	11.19	11 19	1.79	54	12.98	*5.11	5 88	27 23	380
385	**Planters' Complete Fertilizer**	Claimed	1.50	......	10.00	......	1.00	......	11.00	1.50	......	......	
	The Planters' Fertilizer Co., Carrollton, O...	Found	1.35	3 38	11.90	11 90	1.40	42	13.30	1.25	1 31	17 01	385
387	**Soluble Bone and Potash**..	Claimed	1.25	......	9.00	......	1.00	......	10.00	2.00	......	......	
	The Alliance Fertilizer Co., Alliance, O.......	Found	0.80	2 00	11.38	11 38	1.79	54	13.17	2.37	2 49	16 41	387
389	**Peerless Bone**.......	Claimed	2.50	......	......	......	......	......	12.00	1.00	......	......	
	The E. Rauh & Sons' Fert. Co., Indianapolis, Ind	Found	3.05	7 62	6.85	6 85	†5.94	3 56	12.79	1.31	1 37	19 40	389
391	**Ox Bone with Ammonia and Potash**...	Claimed	1.00	......	10.00	......	1.00	......	11.00	1.00	......	......	
	The Tennessee Chemical Co., Nashville, Tenn.	Found	0.95	2 38	11.96	11 96	1.40	42	13.36	0.79	83	15 59	391
392	**Globe Wheat Grower**.	Claimed	2.00	......	8.00	......	1.00	......	10.00	2.00	......	......	
	The Globe Fertilizer Co., Louisville, Ky.....	Found	2.20	5 50	11 00	11 00	0.44	13	11.44	2.24	2 35	18 98	392
393	**Potato Fertilizer**.........	Claimed	2.50	......	9.00	......	2.00	......	11.00	3.25	......	......	
	The Bradley Fertilizer Co., Boston, Mass.....	Found	2.40	6 00	7.80	7 80	2.49	75	10.29	3.89	4 09	18 64	393
396	**Chicago Brand**..................	Claimed	2.50	......	7.00	......	4.00	......	11.00	1.00	......	......	
	Darling & Company, Chicago, Ill...........	Found	2.75	6 88	7.30	7 30	†7.73	4 64	15.03	1.29	1 35	20 17	396
399	**Quinnipiac Ammoniated Dissolved Bone**..........	Claimed	2.00	......	9.00	......	......	......	10.00	2.00	......	......	
	The Quinnipiac Co., New York, N. Y.........	Found	2.75	6 88	8.64	8 64	2.49	75	11.13	2.42	2 54	18 81	399
403	**Four Fold**	Claimed	2.00	......	7.00	......	1.00	......	8.00	2.00	......	......	
	Walker, Stratman & Co., Pittsburg, Pa.......	Found	2.15	5 38	6.77	6 77	†3.52	2 11	10.29	3.59	3 77	18 03	403

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* From sulphate. † From animal matter.

TABLE I.—MIXED FERTILIZERS, WITH POTASH — Concluded.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia.		Phosphoric acid.					Potash.		Total Value.	Record Number.
					Available.		Insoluble.		Total per cent.				
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.		Per cent.	Value.		
404	**Smoky City**..........	Claimed	1.50	....	7.00	......	1.00	....	8.00	1.50	......	.....	
	Walker, Stratman & Co., Pittsburg, Pa.	Found	1.75	4 38	7.29	7 29	†2.49	1 49	9.78	1.70	1 78	14 94	404
405	**Special**..........	Claimed	2.50	....	11.00	......	3.00	......	14.00	1.25	.....	....	
	McLean, Dahl & Co., Washington C. H., O....	Found	1.60	4 00	11.25	11 25	3.52	1 06	14.77	*1.43	1 64	17 95	405
406	**Soluble Bone**..........	Claimed	1.00	......	6.50	.....	0.50	....	7.00	2.35	......	....	
	The Springfield Fertilizer Co., Springfield, O.	Found	1.25	3 12	5.83	5 83	1.08	32	6.91	3.51	3 59	12 86	406
408	**No. 1 Bone Phosphate**..........	Claimed	2.50	....	8.50	....	....	....	......	2.00	......	....	
	Sharpless & Carpenter, Philadelphia, Pa.....	Found	2.40	6 00	9.53	9 53	0.96	29	10.49	2.12	2 23	18 05	408
411	**Quinnipiac Mohawk Fertilizer**..........	Claimed	1.00	....	7.00	......	1.00	....	8.00	1.00	....	....	
	The Quinnipiac Co., New York, N. Y........	Found	1.35	3 38	9.47	9 47	4.86	1 46	14.33	1.22	1 28	15 59	411
412	**Cumberland Guano**..........	Claimed	0.82	.....	8.00	.....	2.00	....	10.00	2.00	....	....	
	The Cumberland Bone-Phos. Co., Boston, Mass.	Found	1.65	4 12	8.88	8 88	3.64	1 09	12.52	2.58	2 71	16 80	412
415	**Button Bone**..........	Claimed	2.25	......	10.00	.....	2.00	......	12.00	3.00	....	....	
	The Alliance Fertilizer Co., Alliance, O.......	Found	1.75	4 38	10.74	10 74	1.40	42	12.14	3.68	3 86	19 40	415
416	**Star Bone Phosphate**..........	Claimed	2.25	....	8.50	....	2.00	.....	10.50	2.50	......	......	
	The Tygert-Allen Fert. Co., Philadelphia, Pa.	Found	2.00	5 00	8.44	8 44	2 05	62	10.49	2.70	2 83	16 89	416
417	**Ammoniated Bone Phosphate**..........	Claimed	1.00	......	8.00	......	1.00	......	9.00	1.00	......	......	
	The Tygert-Allen Fert. Co., Philadelphia, Pa.	Found	1.10	2 75	7.66	7 66	2.49	75	10.15	1.06	1 11	12 27	417

418	**Stanley's Bone Black Crop Multiplier**............	Claimed	2.00	....	8.00	......	2.00	....	10.00	2.00	....	.....	
	B. T. Stanley, Berlin Center, O..	Found	1.50	3 75	8.96	8 96	†1.77	1 06	10.73	0.36	38	14 15	418
422	**International Potato and Truck Manure**	Claimed	1.50	......	8.00	....	1.00	....	9.00	7.00	....	.....	
	The International Seed Co., Rochester, N. Y..	Found	1.50	3 75	9.54	9 54	1.59	48	11.13	*8.17	9 40	23 17	422
424	**Coal Grove Fertilizer**	Claimed	....	.....	....	....	....	.....	....	....	.....	... ..	
	The Coal Grove Fertilizer Co., Coalgrove, O..	Found	0.10	25	0.18	18	0.13	04	0.31	0.19	20	67	424
425	**Tobacco Grower**...............	Claimed	4.00	....	8.00	.....:	2·00	....	10.00	4 00	....	......	
	The Northwestern Fertilizing Co., Chicago, Ill.	Found	4.40	11 00	10.68	10 68	3.19	96	13.87	*4.45	5 12	27 76	425
429	**A 1 Special Manure**.....................	Claimed	3.00	....	6.00	......	1.00	... ...	7.00	10.00	... . .	. . ...	
	The International Seed Co., Rochester, N. Y..	Found	3.80	9 50	6.40	6 40	1.15	34	7.55	8.15	8 56	24 80	429
430	**Zell's Economizer**............	Claimed	1.00	..... .	9.00	. .....	2.00	....	11.00	1.00	....	......	
	The Zell Guano Co., Baltimore, Md.	Found	1.25	3 12	10.61	10 61	1.72	52	12.33	1.25	1 31	15 56	430
432	**Fish Guano**..	Claimed	2.00	....	8.00	.... .	2.00	....	10.00	2.00	. ....	... ..	
	The Baltimore Guano Co., Baltimore, Md.....	Found	2.10	5 25	8.12	8 12	2.43	73	10.55	2.97	3 12	17 22	432
433	**Genesee County Wheat Grower**..	Claimed	1.21	... ...	10.00	. .....	2.00	......	......	5.00	.. ....	......	
	The Oakfield Fertilizer Co., Buffalo, N. Y...	Found	1.10	2 75	9.91	9 91	1.53	46	11.44	4.49	4 71	17 83	433
434	**Standard Bone Phosphate**.....................	Claimed	2.00	....	8.00	....	2.00	.. ...	10.00	2.00	....	....	
	The Tygert-Allen Fert. Co., Philadelphia, Pa.	Found	2.20	5 50	8.50	8 50	2.30	69	10 80	2.16	2 27	16 96	434
435	**Farm and Fruit Fertilizer**......................	Claimed	....	......	..... .	....	......:	.... ..	. .....	......	....	......	
	C. R. Lawwill, Manchester, O...	Found	0.70	1 75	0.12	12	0.26	08	0.38	2.18	2 29	4 24	435
438	**Dissolved Bone and Potash**......	Claimed	3.00	....	....	......	....	......	21.00	2.50	....	... ...	
	The Canton Fertilizer Co., Canton, O........	Found	2.35	5 88	7.03	7 03	3.71	1 11	10.74	2.37	2 49	16.51	438

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*From sulphate. †From animal matter.

TABLE II.—Mixed Fertilizers, Without Potash.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia.		Phosphoric Acid.					Total Value.	Record Number.
					Available		Insoluble.		Total per cent.		
			Per cent.	Value.	Per cent.	Value.	Per cent	Value.			
20	**Acidulated Bone**	Claimed	1.00		10.00		2.00		12.00		
	The Northwestern Fertilizing Co., Chicago, Ill	Found	1.95	$4 88	11.19	$11 19	2.81	$0 84	14.00	$16 91	20
30	**Half and Half**	Claimed	2.50		8.00				15.00		
	The Western Union Chemical Co., Cleveland, O	Found	1.85	4 62	7.99	7 99	6.27	1 88	14.26	14 49	30
39	**Jewel Phosphate**	Claimed	0.75		8.00		2.00		10.00		
	The Jones Fertilizing Co., Cincinnati, O	Found	1.00	2 50	9.41	9 41	2.23	67	11.64	12 58	39
47	**Red Line Ammoniated Phosphate**	Claimed	2.00		8.00				9.00		
	Michigan Carbon Works, Detroit, Mich	Found	2.70	6 75	8.96	8 96	1.59	48	10.55	16 19	47
63	**Dissolved Bone Phosphate**	Claimed	1.50		11.00		2.00		13.00		
	The Northwestern Fertilizing Co., Chicago, Ill	Found	2.00	5 00	9.59	9 59	2.81	84	12.40	15 43	63
74	**Wheat Special**	Claimed	0.50		12.00						
	The I. P. Thomas & Son Co., Philadelphia, Pa	Found	2.45	6 12	4.74	4 74	5.62	1 69	10.36	12 55	74
95	**Twenty-six Dollar Phosphate**	Claimed	2.00		6.00		3.00				
	The Northwestern Fertilizing Co., Chicago, Ill	Found	3.60	9 00	9.22	9 22	†2.61	1 57	11.83	19 79	95
104	**Ruby**	Claimed	1.00		14.00				15.00		
	Jas. McCallum & Co., Dayton, O	Found	0.90	2 25	14.65	14 65	1.66	50	16.31	17 40	104
107	**Prairie Phosphate**	Claimed	2.00		6.00		2.00		8.00		
	The Northwestern Fertilizing Co., Chicago, Ill	Found	3.00	7 50	8.62	8 62	†3.33	2 00	11.95	18.12	107

116	**Ohio Farmers' Phosphate**	Claimed	2.00	......	......	......	......	......	12.00	......	
	The Bucyrus Fertilizer Co., Bucyrus, O.	Found	1.95	4 88	13.91	13 91	1.72	52	15.73	19 31	116
131	**Diamond Cereala Soluble Bone**	Claimed	0.50	......	15.00	......	2.00	......	17.00	......	
	The Walton Fertilizer Co., Warren. O.	Found	0.55	1 38	15.35	15 35	0.90	27	16.25	17 00	131
142	**Linndale**	Claimed	2.00	......	......	......	......	......	11.00	......	
	E. Herrick, (successor Herrick, Harris & Co.,) Cleveland, O.	Found	2.50	6 25	9.01	9 01	3.00	90	12.01	16 16	142
144	**Pride of Ohio**	Claimed	2.00	......	......	......	......	......	11.00	......	
	E. Herrick, (successor Herrick, Harris & Co.,) Cleveland, O.	Found	1.60	4 00	9.33	9 33	3.00	90	12.33	14 23	144
161	**Raw and Dissolved Bone**	Claimed	2.00	......	8.00	......	10.00	......	18.00	......	
	The I. P. Thomas & Son Co., Philadelphia, Pa.	Found	1.70	4 25	14.71	14 71	7.55	2 27	22.26	21 23	161
197	**Entire Bone Phosphate**	Claimed	1.25	......	9.00	......	......	......	12.00	......	
	The Western Union Chemical Co., Cleveland, O.	Found	1.40	3 50	9.40	9 40	3.00	90	12.40	13.80	197
211	**Old Honesty Phosphate**	Claimed	1.60	......	10.00	......	3.00	......	13.00	......	
	The Royal Fertilizer Co., Cleveland, O	Found	1.70	4 25	10.49	10 49	3.13	94	13.62	15 68	211
217	**Ohio Seed Maker**	Claimed	1.50	......	10.00	......	......	......	15.00	......	
	The Cleveland Dryer Co., Cleveland, O.	Found	1.60	4 00	9.79	9 79	3.13	94	12.92	14 73	217
224	**Live and Let Live Phosphate**	Claimed	3.00	......	6.00	......	2.00	......	9.00	......	
	J. L. & H. Stadler, Cleveland, O.	Found	2.65	6 62	6.97	6 97	1.02	31	7.99	13 90	224
365	**Ammoniated Dissolved Bone**	Claimed	1.50	......	10.00	......	......	......	15.00	......	
	The Cleveland Dryer Co., Cleveland, O.	Found	1.50	3 75	11.64	11 64	2.36	71	14.00	16.10	365
373	**Guano Fertilizer**	Claimed	2.00	......	9.00	......	2.00	......	12.00	......	
	The Pittsburg Provision Co., Pittsburg, Pa.	Found	1.85	4 62	8.13	8 13	5.17	1 55	13.30	14 30	373
381	**Improved Bone**	Claimed	3.00	......	5.00	......	......	......	21.00	......	
	The Western Union Chemical Co., Cleveland, O	Found	3.30	8 25	9.15	9 15	7.10	2 13	16.25	19 53	381
383	**Square Bone**	Claimed	2.50	......	6.00	......	......	......	20.00	......	
	The Cleveland Dryer Co., Cleveland, O.	Found	3.30	8 25	8.56	8 56	†7.23	4 34	15.79	21 15	383

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† From animal matter.

TABLE II.—MIXED FERTILIZERS, WITHOUT POTASH—Concluded.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia.		Phosphoric Acid.					Total Value.	Record Number.
					Available		Insoluble.		Total per cent.		
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.			
306	**German Cologne**	Claimed	3.00						26.00		
	J. L. Norton, Delaware, O	Found	3.00	7 50	9.00	9 00	14.03	4 21	23.03	20 71	306
420	**Bone and Meat Phosphate**	Claimed	2.50		6.00		5.00		11.00		
	J. L. & H. Stadler, Cleveland, O	Found	2.50	6 25	5.68	5 68	6.84	2 05	12.52	13.98	420
437	**Helpmate**	Claimed	1.00		11.00		1.50		12.50		
	Walker, Stratman & Co., Pittsburg, Pa	Found	1.05	2 62	11.26	11 26	1.53		12.79	14 34	437

TABLE III.—DISSOLVED BONE.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia.		Phosphoric Acid.					Total Value.	Record Number.
					Available		Insoluble.		Total per cent.		
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.			
11	**Acidulated Bone Meal**	Claimed	2.00	......	11.00	......	7.00	......	18.00	......	
	The Armour Fertilizer Works, Chicago, Ill	Found	2.50	$6 25	11.37	$11 37	†12.10	$7 26	23.47	$24 88	11
171	**Ohio Valley Bone Dust**	Claimed	3.80	......	......	......	......	......	17.00	......	
	The Wheeling Butchers' Association, Wheeling, W. Va.	Found	3.60	9 00	8.12	8 12	†7.67	4 60	15.79	21 72	171
174	**Fine Ground Bone**	Claimed	4.00	......	......	......	......	......	23.00	......	
	The American Reduction Co., Pittsburg, Pa.	Found	5.00	12 50	12.36	12 36	†8.37	5 02	20.73	29 88	174
362	**Indian Brand Pure Acidulated Bone**	Claimed	4.00	......	12.00	......	7.00	......	19.00	......	
	Geo. S. Bartlett, (suc. The Cincin'ti Desc. Co.) Cincinnati, O.	Found	4.80	12 00	10.61	10 61	†7.17	4 30	17.78	26 91	362

† From animal matter.

TABLE IV.—ROCK PHOSPHATE.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid.			Value.	Record Number.
			Available.	Insoluble.	Total per cent.		
			Per cent.	Per cent.			
1	**Potomac Bone Phosphate**	Claimed	14.00		16.00		
	The Potomac Fertilizer Co., Baltimore, Md.	Found	13.17	2.08	15.25	$13 17	1
4	**Acid Phosphate**	Claimed	10.00	2.00	12.00		
	The Pacific Guano Co., New York, N. Y.	Found	14.01	0.96	14.97	14 01	4
8	**Clark's Cove Sovereign Acid Phos.**	Claimed	12.00	1.00	13.00		
	The Clark's Cove Fertilizer Co., Boston, Mass.	Found	11.41	1.11	12.52	11 41	8
15	**Armour's Acid Phosphate.**	Claimed	12.00				
	The Armour Fertilizer Works, Chicago, Ill.	Found	14.58	1.98	16.56	14 58	15
17	**Cumberland Dissolved Bone Phosphate**	Claimed	10.00	2.00	12.00		
	The Cumberland Bone-Phosphate Co., Boston, Mass.	Found	10.67	1.66	12.33	10 67	17
21	**Quick Acting Phosphate**	Claimed	13.00	2.00	15.00		
	The Northwestern Fertilizing Co., Chicago, Ill.	Found	11.19	3.58	14.77	11 19	21
22	**T. & P. Superphosphate**	Claimed	14.00	2.00	16.00		
	J. W. Hunter, Baltimore, Md.	Found	15.10	1.79	16.89	15 10	22
26	**V. C. C. Co.'s Double Bone Phos. (extra strong)**	Claimed			14.00		
	The Virginia-Carolina Chemical Co., Richmond, Va.	Found	14.33	1.28	15.61	14 33	26
31	**International Phosphate**	Claimed	12.00		14.00		
	The Western Union Chemical Co., Cleveland, O.	Found	13.95	1.46	15.41	13 95	31

32	**Bull Dog Phosphate**	Claimed	10.00	....	12.00	....	....
	The Western Union Chemical Co., Cleveland, O	Found	11.12	1.46	12.58	11 12	32
34	**C. O. D. Phosphate**	Claimed	14.00	1.00	....	....	....
	The Jarecki Chemical Co., Sandusky, O	Found	15.86	1.34	17.20	15 86	34
36	**Dissolved Bone Black, Wheat Special**	Claimed	15.00	1.00	....	....	....
	The Jarecki Chemical Co.. Sandusky, O	Found	15.93	1.34	17.27	15 93	36
42	**Bowker's Dissolved Bone Phosphate**	Claimed	10.00	....	12.00	....	....
	The Bowker Fertilizer Co., Boston, Mass	Found	11.05	1.66	12.71	11 05	42
49	**Acid Phosphate**	Claimed	13.00	....	14.00	....	....
	Michigan Carbon Works, Detroit, Mich	Found	14.65	1.40	16.05	14 65	49
50	**Superior Phosphate**	Claimed	14.00	1.00	15.00	....	....
	The Ohio Farmers' Fertilizer Co., Columbus, O	Found	14.46	0.51	14.97	14 46	50
53	**Standard Dissolved Bone Phosphate**	Claimed	10.00	2.00	12.00	....	....
	The Standard Fertilizer Co., Boston, Mass	Found	14.14	1.21	15.35	14 14	53
55	**Acid Phosphate**	Claimed	9.00	1.00	10.00	....	...
	The Ohio Farmers' Fertilizer Co., Columbus, O	Found	14.77	0.51	15.28	14 77	55
57	**C. & G. Phosphate**	Claimed	10.00	2.00	12.00	....	...
	J. W. Hunter, Baltimore, Md.	Found	10.31	2.74	13.05	10 31	57
61	**Currie's Corn and Wheat Special**	Claimed	12.00	2.00	....	....	....
	The Currie Fertilizer Co., Louisville, Ky	Found	11.32	4.22	15.54	11 32	61
67	**Dissolved Bone. Justice Brand**	Claimed	12.00	1.00	13.00	....	...
	The Bradley Fertilizer Co., Boston, Mass	Found	12.03	1.46	13.49	12 03	67
68	**Acid Phosphate**	Claimed	10.00	2.00	12.00	....	....
	The Bradley Fertilizer Co., Boston, Mass	Found	10.94	1.85	12.79	10 94	68
71	**Dissolved Bone Phosphate**	Claimed	14.00	2.00	16.00	....	....
	The Zell Guano Co., Baltimore, Md.	Found	15.44	1.52	16.96	15 44	71

TABLE IV.—ROCK PHOSPHATE—Continued.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid.			Value.	Record Number.
			Available. Per cent.	Insoluble. Per cent.	Total per cent.		
73	**Dissolved Bone**	Claimed			14 00		
	The Bucyrus Fertilizer Co., Bucyrus, O	Found	15 87	1.02	16.89	15 87	73
75	**S. C. Phosphate**	Claimed	14.00	2.00	16.00		
	The I. P. Thomas & Son Co., Philadelphia, Pa	Found	18.03	0.26	18.29	18 03	75
81	**Dissolved Bone Phosphate**	Claimed	14.00	1.00	15.00		
	Strecker Bros., Marietta, O	Found	16.82	0.64	17.46	16 82	81
84	**Dissolved Bone**	Claimed	11.00	1.37	12.37		
	The Milsom Rendering & Fertilizer Co., Buffalo, N. Y	Found	12.79	0.44	13.23	12 79	84
87	**XXX Phosphate**	Claimed	13.00		15.00		
	The Cleveland Dryer Co., Cleveland, O.	Found	13.88	1.40	15.28	13 88	87
89	**Horsehead Phosphate**	Claimed	10.00		12.00		
	The Cleveland Dryer Co., Cleveland O	Found	11.71	1.59	13.30	11 71	89
114	**Zell's Dissolved S. C. Phosphate**	Claimed	12.00	2.00	14.00		
	The Zell Guano Co., Baltimore, Md	Found	13.76	1.72	15.48	13 76	114
118	**Soluble Bone**	Claimed	14.00	2.00	16.00		
	S. M. Hess & Bro., Philadelphia, Pa	Found	16.88	0.32	17.20	16 88	118
120	**Acid Phosphate**	Claimed	14.00	2.00	16.00		
	S. M. Hess & Bro., Philadelphia, Pa	Found	15.64	1.53	17.17	15 64	120

121	**XXtra Acid Phosphate**	Claimed	14.00	0.75	14.75	....	....
	Louis F. Detrick, Baltimore, Md	Found	14.97	0.64	15.61	14 97	121
138	**Reese's Elm Phosphate**	Claimed	14.00	1·00	15.00	....	....
	John S. Reese & Co., Baltimore, Md	Found	15.23	2.30	17.53	15 23	138
152	**Rasin's Acid Phosphate**	Claimed	14.00	1.00	15.00	....	....
	The Rasin Fertilizer Co., Baltimore, Md	Found	15.93	1.53	17.46	15 93	152
159	**Dissolved Bone**	Claimed	12.00	....	....	....	....
	L. Frank & Sons, Zanesville, O	Found	12.29	8.50	20.79	12 29	159
165	**Quinnipiac Soluble Dissolved Bone**	Claimed	13.00	1.00	14.00	....	....
	The Quinnipiac Co., New York, N. Y	Found	15.03	0.96	15.99	15 03	165
179	**Reliable Dissolved Bone**	Claimed	14.00	2.00	16.00	....	....
	The Walton Fertilizer Co., Warren, O	Found	14.33	3.00	17.33	14 33	179
180	**Special Dissolved Bone Phosphate**	Claimed	12.00	2.00	14.00	....	....
	The Walton Fertilizer Co., Warren, O	Found	11.07	2.23	13.30	11 07	180
190	**Great Eastern Dissolved Bone**	Claimed	14.00	2.00	....	....	....
	The Great Eastern Fertilizer Co., Rutland, Vt	Found	14.40	1.08	15.48	14 40	190
194	**Electrical Dissolved Bone**	Claimed	14.00	2.00	16.00	....	....
	M. E. Wheeler & Co., Rutland, Vt.	Found	15.29	1.08	16.37	15 29	194
201	**Farmers' General Crop Phosphate**	Claimed	10.00	2.00	12.00	....	....
	The Southeastern Fertilizer Co., Cleveland, O	Found	11.06	1.40	12.46	11 06	201
215	**Alliance Phosphate**	Claimed	11.50	1.00	12.50	....	....
	The Royal Fertilizer Co., Cleveland, O	Found	13.69	1.40	15.09	13 69	215
235	**Baker's Dissolved Bone Phosphate**	Claimed	14.00	1.00	15.00	....	....
	The Chemical Co. of Canton, Baltimore, Md	Found	13.25	2.23	15.48	13 25	235
246	**Capital City Wheat Grower**	Claimed	14.00	1.00	15.00	....	....
	The Columbus Phosphate Co., Columbus, O	Found	15.03	1.15	16.18	15 03	246

TABLE IV.—ROCK PHOSPHATE—Continued.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid.			Value.	Record Number.
			Available. Per cent.	Insoluble. Per cent.	Total per cent.		
255	**Dissolved Bone Phosphate of Lime**	Claimed	13.00	1 00	14.00	......	....
	The Pacific Guano Co., Boston, Mass.	Found	13.18	1.46	14.64	13 18	255
258	**Acid Phosphate**	Claimed	12.00	1.00	14.00	....	....
	Henry Conway, Marietta, O.	Found	15.81	0.18	15.99	15 81	258
261	**Banner Dissolved Bone**	Claimed	30.00	....	32.00	....	...
	Michigan Carbon Works, Detroit, Mich	Found	33.45	1.98	35.43	33 45	261
266	**Queen City Phosphate**	Claimed	11.00	2.00	13.00	....	...
	The Niagara Fertilizer Works, Buffalo, N. Y.	Found	11.37	0.96	12.33	11 37	266
267	**W. & C. Acorn Brand, Acid Phosphate**	Claimed	13.00	1.00	14.00	....	....
	The Williams & Clark Fertilizer Co., New York, N. Y.	Found	15.60	0.83	16.43	15 60	267
272	**Rickard's Dissolved Bone Phosphate**	Claimed	16.00	1.00	17.00	....	...
	G. W. Rickard, Medina, O.	Found	16.70	1.34	18.04	16 70	272
282	**Powell's Dissolved Bone Phosphate**	Claimed	14.00	2.00	16.00	....	...
	The Powell Fertilizer and Chemical Co., Baltimore, Md.	Found	15.02	2.05	17.07	15 02	282
287	**Acidulated Phosphate**	Claimed	14.00	1.00	16.00	....	....
	Josiah Cope & Co., Lincoln University, Pa.	Found	15.23	2.36	17.59	15 23	287
291	**Baugh's High Grade Super Phosphate**	Claimed	14.00	1.00	15.00	....	..
	The Baugh & Sons Co., Philadelphia, Pa.	Found	15.74	0.38	16.12	15 74	291

293	**Orchilla Guano**	Claimed	....	....	14.00	....	....
	Louis F. Detrick, Baltimore, Md.	Found	5.89	11.31	17.20	5 89	293
295	**Ox High Grade Dissolved Bone**	Claimed	14.00	1.00	15.00	....	....
	The Tennessee Chemical Co., Nashville, Tenn.	Found	13.98	2.14	16.12	13 98	295
304	**Bear Dissolved Bone**	Claimed	14.00	1.00	15.00	....	....
	The Continental Fertilizer Co., Nashville, Tenn.	Found	15.54	1.66	17.20	15 54	304
307	**Detrick's Soluble Bone Phosphate**	Claimed	13.50	0.75	14.25	....	...
	The Detrick Fertilizer and Chemical Co, Baltimore, Md	Found	14.07	1.98	16.05	14 07	307
309	**Ober's Dissolved Bone Phosphate**	Claimed	14.00	2.00	16.00	....	..
	The G. Ober & Sons Co., Baltimore, Md.	Found	16.76	0.64	17.40	16 76	309
314	**Critchfield's Standard Phosphate**	Claimed	14.00	2.00	16.00	....	...
	The Lazaretto Guano Co., Baltimore, Md.	Found	15.55	1.72	17.27	15 55	314
326	**Erie Queen.**	Claimed	11.00	1.00	12.00	....	...
	The Farmers' Union Fertilizer Works, Buffalo, N. Y.	Found	12.61	2.36	14.97	12 61	326
332	**Erie Fertilizer**	Claimed	11.00	2.00	13.00	....	....
	The Crocker Fertilizer & Chemical Co., Buffalo, N. Y.	Found	11.89	3.46	15.35	11 89	332
338	**Soluble Bone Phosphate**	Claimed	14.00	1.00	16.00	... .	...
	The Susquehanna Fertilizer Co., Baltimore, Md.	Found	15.87	1.08	16.95	15 87	338
348	**Urbana Acidulated Bone**	Claimed	13.00	....	16.00	.. ...	....
	The Loudenback Fertilizer Co., Urbana, O.	Found	12.80	2.23	15.03	12 80	348
349	**Urbana Animal Tankage and Guano**	Claimed	8.00	....	9.00	... .	....
	The Loudenback Fertilizer Co.. Urbana, O.	Found	9.08	1.72	10.80	9 08	349
354	**Dissolved Bone**	Claimed	16.00	1.00	17.00	....	....
	The M. Hamm Co., Washington C. H., O.	Found	19.45	0.70	20.15	19 45	354
355	**Economy**	Claimed	9.00	1.00	10.00	....	....
	The M. Hamm Co., Washington C. H., O.	Found	16.45	1.08	17.53	16 45	355

TABLE IV.—ROCK PHOSPHATE—Concluded.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid.			Value.	Record Number.
			Available. Per cent.	Insoluble. Per cent.	Total per cent.		
366	**W. & C. Dissolved Bone Phosphate**	Claimed	10.00	2.00	12.00	....	...
	The Williams & Clark Fertilizer Co., New York, N. Y.	Found	12.54	1.85	14.39	12 54	366
374	**Acid Phosphate**	Claimed	14.00	1.00	15.00	....	....
	The Pittsburg Provision Co., Pittsburg, Pa.	Found	16.69	1.92	18.61	16 69	374
388	**Acidulated Bone**	Claimed	14.00	1.00	....	....	...
	The Packers' Union Fertilizer Co., New York, N. Y.	Found	15.61	1.08	16.69	15 61	388
407	**No. 1**	Claimed	14.00	0.75	....	....	....
	The Springfield Fertilizer Co., Springfield, O.	Found	14 90	1.53	16.43	14 90	407
409	**No. 4**	Claimed	8.00	0.25	8.25	....	...
	The Springfield Fertilizer Co., Springfield, O.	Found	9.92	1.59	11.51	9 92	409
419	**Dissolved Bone Phosphate**	Claimed	14.00	1.00	15.00	....	....
	The Tygert-Allen Fertilizer Co., Philadelphia, Pa.	Found	16.30	0.90	17.20	16 30	419
427	**Pure Acid Phosphate**	Claimed	16.00	1.50	17.50	....	...
	Swift & Company, Chicago, Ill.	Found	16.31	2.68	18.99	16 31	427
431	**Farmers' Dissolved Bone**	Claimed	14.00	1.00	15.00	....	...
	The Baltimore Guano Co., Baltimore, Md.	Found	15.35	1.79	17.14	15 35	431

TABLE V.—ROCK PHOSPHATE AND POTASH.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid.				Potash.		Total Value.	Record Number.
			Available.		Insoluble.					
			Per cent.	Value.	Per cent.	Total per cent.	Per cent.	Value.		
3	**Alkaline Bone**	Claimed	11.00	....	1.00	12.00	2.43	....	....	....
	The Bradley Fertilizer Co., Boston, Mass	Found	11.04	$11 04	1.54	12.58	1.82	$1 91	$12 95	3
7	**Dissolved Bone and Potash**	Claimed	10.00	....	1.00	11.00	2.00	....	....	....
	The Pacific Guano Co., New York, N. Y	Found	13.37	13 37	0.83	14.20	1.18	1 24	14 61	7
10	**Triumph Bone and Potash**	Claimed	10.00	....	1.00	11.00	2.00	....	....	....
	The Clark's Cove Fertilizer Co., Boston, Mass	Found	10.87	10 87	1.27	12.14	1.23	1 29	12 16	10
18	**Cumberland Bone and Potash**	Claimed	8.00	....	2.00	10.00	2.50	....	....	....
	The Cumberland Bone-Phosphate Co., Boston, Mass	Found	10.45	10 45	1.44	11.89	1.93	2 03	12 48	18
23	**T. & P. Superphosphate with Potash**	Claimed	10.00	....	2.00	12.00	1.00	....	....	....
	J. W. Hunter, Baltimore, Md	Found	11.63	11 63	1.08	12.71	1.16	1 22	12 85	23
24	**Bowker's Dissolved Bone with Potash**	Claimed	10.00	....	....	12.00	1.00	....	....	....
	The Bowker Fertilizer Co., Boston, Mass	Found	10.10	10 10	3.07	13.17	1.12	1 18	11 28	24
29	**Great Eastern Sol. Bone and Potash**	Claimed	11.00	....	2.00	12.00	2.00	....	....	....
	The Great Eastern Fertilizer Co., Rutland, Vt	Found	12.84	12 84	1.42	14.26	*1.62	1 86	14 70	29
33	**Dissolved Bone and Potash**	Claimed	12.00	....	....	14.00	5.00	....	....	....
	The Western Union Chemical Co., Cleveland, O	Found	12.54	12 54	1.53	14.07	3.22	3 38	15 92	33
52	**Standard Bone and Potash**	Claimed	8.00	....	2.00	10.00	2.50	....	....	....
	The Standard Fertilizer Co., Boston, Mass	Found	13.62	13 62	0.96	14.58	0.77	81	14 43	52

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* From sulphate.

TABLE V.—ROCK PHOSPHATE AND POTASH—Continued.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid.				Potash.		Total Value.	Record Number.
			Available.		Insoluble.	Total per cent.				
			Per cent.	Value.	Per cent.		Per cent.	Value.		
88	**XXX Phosphate with Potash**	Claimed	12.00	....	....	14.00	5.00	....	....	....
	The Cleveland Dryer Co., Cleveland, O	Found	11.70	11 70	1.79	13.49	4.62	4 85	16 55	88
93	**Bone and Potash**	Claimed	10.00	....	2.00	12.00	1.25	....	....	....
	The Northwestern Fertilizing Co., Chicago, Ill	Found	12.03	12 03	2.87	14.90	*0.87	1 00	13 03	93
105	**Competitor**	Claimed	9.00	....	....	10.00	1.00	....	....	....
	Jas. McCallum & Co., Dayton, O	Found	11.57	11 57	1.08	12.65	0.17	18	11 75	105
123	**Bone and Potash Mixture**	Claimed	10.00	....	2.50	12 50	2.25	....	....	....
	Louis F. Detrick, Baltimore, Md	Found	10.92	10 92	1.66	12.58	2.42	2 54	13 46	123
130	**Diamond Cereala Bone Black and Potash**	Claimed	13.00	....	2.00	15.00	3.00	....	....	....
	The Walton Fertilizer Co., Warren, O	Found	13.18	13 18	0.57	13.75	2.22	2 33	15 51	130
135	**Bowker's Super Phosphate with Potash**	Claimed	10.00	....	....	12.00	1.00	....	....	....
	The Bowker Fertilizer Co., Boston, Mass	Found	9.59	9 59	3.84	13.43	2.28	2 40	11 99	135
137	**Crown Phosphate and Potash**	Claimed	12.00	....	2.00	14.00	2.00	....	....	....
	John S. Reese & Co., Baltimore, Md	Found	14.40	14 40	2.23	16.63	1.47	1 55	15 95	137
148	**Dissolved Bone and Potash**	Claimed	9.00	....	2.00	11.00	1.65	....	....	....
	The Milsom Rendering and Fertilizer Co., Buffalo, N. Y	Found	10.23	10 23	0.32	10.55	1.56	1 64	11 87	148
163	**Grain and Grass**	Claimed	12.00	....	1.00	13.00	1.00	....	....	....
	The Ohio Farmers' Fertilizer Co., Columbus, O	Found	12.47	12 47	0.38	12.85	*1.00	1 15	13 62	163

166	**Dissolved Bone and Potash**	Claimed	10.00	....	1.00	11.00	2.00	....	....	....
	The Quinnipiac Co., New York, N. Y.	Found	14.33	14 33	0.64	14.97	0.93	97	15 30	166
167	**Phosphate and Potash**	Claimed	10.00	....	2.00	12.00	2.00	....	....	....
	The Armour Fertilizer Works, Chicago, Ill.	Found	10.81	10 81	5.88	16.69	*1.83	2 10	12 91	167
178	**Americus Dissolved Bone and Potash**	Claimed	10.00	....	1.00	11.00	2.00	....	....	....
	The Williams & Clark Fertilizer Co., New York, N. Y.	Found	11.50	11 50	1.08	12.58	2.30	2 42	13 92	178
181	**Zell's Dissolved Bone Phosphate and Potash**	Claimed	12.00	....	2.00	14.00	1.00	....	....	....
	The Zell Guano Co., Baltimore, Md.	Found	13.31	13 31	1.08	14.39	1.12	1 18	14 49	181
193	**Grass and Oats**	Claimed	11.00	....	1.00	12.00	2.00	....	....	....
	M. E. Wheeler & Co., Rutland, Vt.	Found	13.36	13 36	1.15	14.51	1.76	1 85	15 21	193
203	**Red Line Phosphate with Potash**	Claimed	10.00	....	....	12.00	3.00	....	....	....
	The Michigan Carbon Works, Detroit, Mich.	Found	11.32	11 32	1.08	12.40	3.24	3 40	14 72	203
219	**Wheat, Oats and Clover**	Claimed	11.00	....	....	......	2.00	....	....	....
	The Packers' Union Fertilizer Co., New York, N. Y.	Found	10.61	10 61	1.59	12.20	2.22	2 33	12 94	219
231	**Dissolved Bone with Potash**	Claimed	12.00	....	1.00	13.00	1.00	....	....	....
	The M. Hamm Co., Washington C. H., O.	Found	15.74	15 74	1.85	17.59	2.43	2 55	18 29	231
234	**Soluble Bone and Potash**	Claimed	10.00	....	1.00	11.00	2.00	....	....	....
	The Chemical Co. of Canton, Baltimore, Md.	Found	9.28	9 28	2.49	11.77	2.30	2 42	11 70	234
247	**Capital City Dissolved Bone and Potash**	Claimed	12.00	....	1.00	13.00	4.00	....	....	....
	The Columbus Phosphate Co., Columbus, O.	Found	13.31	13 31	1.08	14.39	3.82	4 01	17 32	247
257	**Farmers' General Crop Phosphate with Potash**	Claimed	8.00	....	4.00	12.00	1.00	....	....	....
	The Southeastern Fertilizer Co., Cleveland, O.	Found	8.70	8 70	1.85	10.55	1.50	1 58	10 28	257
260	**Farmers' Alkaline Bone**	Claimed	10.00	....	1.00	11.00	2.00	....	....	....
	The Baltimore Guano Co., Baltimore, Md.	Found	9.53	9 53	1.66	11.19	2.30	2 42	11 95	260
286	**Soluble Bone and Potash**	Claimed	10.00	....	1.00	12.00	2.00	....	....	....
	Josiah Cope & Co., Lincoln University, Pa.	Found	11.89	11 89	1.34	13.23	1.81	1 90	13 79	286

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*From sulphate.

TABLE V.—ROCK PHOSPHATE AND POTASH—Concluded.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid.				Potash.		Total Value.	Record Number.
			Available.		Insoluble.	Total per cent.				
			Per cent.	Value.	Per cent.		Per cent.	Value.		
296	**Ox Bone and Potash**	Claimed	12.00	....	1.00	13.00	1.00	....	....	....
	The Tennessee Chemical Co., Nashville, Tenn	Found	11.83	11 83	1.98	13.81	1.62	1 70	13 53	296
303	**Bear Wheat Grower**	Claimed	11.00	....	1.00	12.00	2.00	....	....	....
	The Continental Fertilizer Co., Nashville, Tenn	Found	10.61	10 61	1.72	12.33	1.29	1 35	11 96	303
310	**Bone and Potash**	Claimed	12.00	....	1.00	13.00	1.00	....	....	....
	The Rasin Fertilizer Co., Baltimore, Md	Found	13.66	13 66	0.90	14.56	0.95	1 00	14 66	310
312	**Bowker's Wheat Grower**	Claimed	10.00	....	....	12.00	1.00	....	....	....
	The Bowker Fertilizer Co., Boston, Mass	Found	10.62	10 62	2.81	13.43	0.95	1 00	11 62	312
316	**High Crade Wheat and Clover**	Claimed	11.00	....	1.00	12.00	2.00	....	....	....
	M. E. Wheeler & Co., Rutland, Vt	Found	13.31	13 31	2.94	16.25	1.08	1 14	14 45	316
318	**Wheat Maker**	Claimed	12.00	....	1.00	13.00	2.50	....	....	....
	The Ohio Farmers' Fertilizer Co., Columbus, O	Found	12.99	12 99	0.44	13.62	2.08	2 18	15 17	318
321	**Urbana Acidulated Bone and Potash**	Claimed	10.00	....	....	11.00	1.00	....	....	....
	The Loudenback Fertilizer Co., Urbana, O	Found	9.52	9 52	2.05	11.57	0.46	.48	10.00	321
325	**Dissolved Bone and Potash**	Claimed	8.00	....	1.00	9.00	2.00	....	....	....
	The Farmers' Union Fertilizer Works, Buffalo, N. Y	Found	9.84	9 84	0.96	10.80	2.53	2 65	12 49	325
337	**Dissolved Bone Phosphate and Potash**	Claimed	13.00	....	2.00	15.00	1.00	....	....	....
	Geo. W. Mace, Greenville, O	Found	13.43	13 43	0.77	14.20	1.23	1 29	14 72	337

340	**Soluble Bone and Potash**	Claimed	12.00	....	1.00	13.00	1.00	....	....	....
	The Ohio Farmers' Fertilizer Co., Columbus, O.	Found	12.41	12 41	1.34	13.75	0.83	87	13.28	340
351	**Ober's Dissolved Bone Phosphate and Potash**	Claimed	11.00	....	2.00	13.00	2.00	....	....	....
	The G. Ober & Sons Co., Baltimore, Md	Found	12.66	12 66	1.21	13.87	2.35	2 47	15 13	351
360	**Favorite**	Claimed	8.00	....	0.50	8.50	1.56	....	....	....
	The Springfield Fertilizer Co., Springfield, O.	Found	8.95	8 95	0.44	9.39	1.74	1 82	10 77	360
378	**Critchfield's Wheat and Grass Phosphate**	Claimed	11.00	....	1.00	12.00	2.00	....	....	....
	The Lazaretto Guano Co., Baltimore Md.	Found	11.56	11 56	0.96	12.52	1.85	1 95	13 51	378
384	**Wheat and Grass Special**	Claimed	12.00	....	1.00	13.00	2.50	....	....	....
	The Planters' Fertilizer Co., Carrollton, O.	Found	13.12	13 12	1.72	14.84	1.31	1 37	14 49	384
386	**Farmers' Friend**	Claimed	11.00	....	1.00	13.00	0.75	....	....	....
	The Alliance Fertilizer Co., Alliance, O.	Found	8.44	8 44	0.70	9.14	1.33	1 39	9 83	386
395	**V. C. C. Co.'s Standard Bone and Potash**	Claimed	......	....	....	10.00	2.00	....	....	....
	The Virginia-Carolina Chemical Co., Richmond, Va.	Found	10.61	10 61	0.90	11.51	2.16	2 27	12 88	395
402	**Big Crop Bone Phosphate and Potash**	Claimed	10.00	....	1.00	11.00	3.00	....	....	....
	George W. Mace, Greenville, O.	Found	11.50	11 50	0.70	12.20	3.79	3 98	15 48	402

TABLE VI.—TANKAGE.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia.		Phosphoric Acid.		Total Value.	Record Number.
			Per cent.	Value.	Per cent.	Value.		
248	**Packing House Fertilizer**	Claimed	8.05		14.20			
	The Cleveland Provision Co., Cleveland, O	Found	7.77	$10 88	14.29	$10 00	$20 88	248
297	**Armour's Bone and Blood**	Claimed	7.00		10.00			
	The Armour Fertilizer Works, Chicago, Ill	Found	6.75	9 45	14.07	9 84	19 29	297
341	**Rupp's Bone and Blood Fertilizer**	Claimed	5.55		16.68			
	George Rupp & Co., Hamilton, O	Found	4.85	6 79	19.76	13 83	20 62	341
342	**Bone Tankage**	Claimed	6.00		17.00			
	Swift & Company, Chicago, Ill	Found	5.65	7 91	18.61	13 03	20 94	342
347	**Acidulated Bone**	Claimed	4.50		16.00			
	The Jones Fertilizing Co., Cincinnati, O	Found	5.35	7 49	9.78	6 84	14 33	347
371	**Crescent Butchers' Ground Bone**	Claimed	3.50		16.00			
	The Pittsburg Provision Co., Pittsburg, Pa	Found	4.05	5 67	15.73	11 01	16 78	371
390	**Ammoniated Bone**	Claimed	5.50		18.00			
	The Jones Fertilizing Co., Cincinnati, O	Found	4.95	6 93	9.27	6 49	13 42	390
401	**Fine Bone**	Claimed	5.00		16.00			
	George A. Bell, Wheelersburg, O	Found	7.40	10 36	13.36	9 35	19 71	401

TABLE VII.—TANKAGE AND POTASH.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia.		Phosphoric Acid.		Potash.		Total Value.	Record Number.
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.		
37	**Tobacco and Potato Grower**	Claimed	5.00	....	12.00	......	6.00	......	....	
	The Jones Fertilizing Co., Cincinnati, O.	Found	5.15	$7 21	11.70	$8 19	*4.91	$5 65	$21 05	37
38	**Jones' Reliable**	Claimed	2.00	......	10.00	....	1.25	....	....	
	The Jones Fertilizing Co., Cincinnati, O.	Found	3 30	4 62	13.56	9 49	*1.87	2 15	16 26	38
249	**Bone Tankage and Potash, 3 per cent**	Claimed	6.00	....	17.00	......	3.00	......	......	
	Swift & Company, Chicago, Ill.	Found	5.00	7 00	18.45	12 92	*2.76	3 17	23 69	249
426	**Bone Tankage and Potash, 6 per cent**	Claimed	6.00	....	17.00	....	6.00	....	....	
	Swift & Company, Chicago, Ill.	Found	4.65	6 51	16.63	11 64	*6.04	6 95	25 10	426

* From sulphate.

TABLE VIII.— BONES.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia.		Phosphoric Acid.					Potash (when included).		Total Value.	Record Number.
					In Fine Bone.		In Med. Bone.						
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.	Total per cent.	Per cent.	Value.		
2	**Abattoir Bone Dust**	Claimed	2.00						14.00				
	The Bradley Fertilizer Co., Boston, Mass.	Found	2.45	$6 12	10.92	$8 74	4.36	$2 62	15.28			$17 48	2
12	**Armour's Bone Meal**	Claimed	3.00						24.00				
	The Armour Fertilizer Works, Chicago, Ill.	Found	3.90	9 75	17.94	14 35	7.33	4 40	25.27			28 50	12
19	**Pure Ground Bone**	Claimed	3.00						18.00				
	The Northwestern Fertilizing Co., Chicago, Ill.	Found	3.65	9 12	17.83	14 26	3.92	2 35	21.75			25 73	19
41	**Bowker's Bone Meal**	Claimed	2.00						20.00				
	The Bowker Fertilizer Co., Boston, Mass.	Found	2.20	5 50	21.29	17 03	8.07	4 84	29.36			27 37	41
54	**Standard Extra Fine Ground Bone**	Claimed	2.00						14.00				
	The Standard Fertilizer Co., Boston, Mass.	Found	3.45	8 62	11.94	9 55	6.29	3 77	18.23			21 94	54
78	**Ground Bone**	Claimed	4.00						20.00				
	Strecker Bros., Marietta, O.	Found	5.65	14 12	13.80	11 04	7.44	4 46	21.24			29 62	78
106	**Fine Raw Bone**	Claimed	4.00						22.00				
	The Northwestern Fertilizing Co., Chicago, Ill.	Found	5.00	12 50	16.29	13 03	5.72	3 43	22.01			28 96	106
110	**Fine Ground Bone Meal**	Claimed	2.00						20.00				
	The Ohio Farmers' Fert. Co., Columbus, O.	Found	1.90	4 75	11.91	9 53	3.76	2 26	15.67			16 54	110
112	**Banner Raw Bone**	Claimed	3.75						20.50				
	Michigan Carbon Works, Detroit, Mich	Found	4.75	11 88	23.32	18 66	1.89	1 13	25.21			31 67	112

124	**Pure Raw Bone Meal**	Claimed	5.00						10.00				
	The E. Rauh & Sons' Fert. Co., Indianapolis. Ind.	Found	4.55	11 38	20.11	16 09	1.06	64	21.17			28 11	124
125	**Pure Ground Bone**	Claimed	5.00						10.00				
	The E. Rauh & Sons' Fert. Co., Indianapolis, Ind.	Found	4.30	10 75	12.12	9 70	7.26	4 36	19.38			24 81	125
149	**Cyclone Bone**	Claimed	3.00						24.50				
	The Milsom Rend. & Fert. Co., Buffalo, N. Y.	Found	4.25	10.62	16.55	13 24	6 28	3 77	22.83			27 63	149
158	**Pure Bone Meal**	Claimed	3.00						24.00				
	L. Frank & Sons, Zanesville, O	Found	3.75	9 38	20.15	16 12	4.42	2 65	24 57			28 15	158
162	**Pure Ground Animal Bone**	Claimed	4.00						21.00				
	The I. P. Thomas & Son Co., Philadelphia, Pa.	Found	5.00	12 50	16.38	13 10	5.75	3 45	22.13			29 05	162
168	**Pure Raw Bone Meal**	Claimed	4.50						23.00				
	Swift & Company, Chicago, Ill.	Found	4.90	12 25	17.09	13 67	6.32	3 79	23.41			29 71	168
169	**Ground Steamed Bone**	Claimed	4.00						23.75				
	Swift & Company, Chicago, Ill.	Found	3.95	9 88	22.66	18 13	2.80	1 68	25.46			29 69	169
208	**Armour's Raw Bone Meal**	Claimed	4.50						22.00				
	The Armour Fert. Works, Chicago, Ill.	Found	4.30	10 75	15.84	12 67	10.13	6 08	25.97			29 50	208
212	**Royal Bone Meal**	Claimed	4.00						20.00				
	The Royal Fertilizer Co., Cleveland, O.	Found	3.85	9 62	13.01	10 41	8.67	5 20	21.68			25 23	212
214	**Ground Bone**	Claimed	3.00						18.00				
	S. M. Hess & Bro., Philadelphia, Pa.	Found	3.60	9 00	9.53	7 62	7.80	4 68	17.33			21 30	214
218	**Superior Bone Meal**	Claimed	4.00						22.00				
	The Cleveland Dryer Co., Cleveland, O.	Found	3.85	9 62	14.00	11 20	7.88	4 73	21.88			25 55	218
222	**Pure Raw Bone Meal**	Claimed	4.50						23.00				
	J. L. & H. Stadler, Cleveland, O.	Found	5.10	12 75	15.48	12 38	6.33	3 80	21.81			28 93	222
236	**Pure Raw Bone Meal**	Claimed	4.50						22.00				
	The Pittsburg Provision Co., Pittsburg, Pa.	Found	4.10	10 25	19.47	15 58	2.66	1 60	22.13			27 43	236
239	**Superior Pure Raw Bone**	Claimed	5.00						21.00				
	The Canton Fertilizer Co., Canton, O.	Found	4.40	11 00	12.99	10 39	5.30	3 18	18.29			24 57	239

TABLE VIII.— BONES — Continued.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia.		Phosphoric Acid.					Potash (when included).		Total Value.	Record Number.
					In Fine Bone.		In Med. Bone.						
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.	Total per cent.	Per cent.	Value.		
250	**Bone and Potash, 3 per cent**	Claimed	2.50	......	......	......	......	......	24.50	3.00	......	......	
	Swift & Company, Chicago, Ill.	Found	3.50	8 75	20.95	16 76	2.46	1 48	23.41	*2.51	2 89	29 88	250
262	**Desiccated Bone**	Claimed	1.50	......	......	......	......	......	25.00	......	......	......	
	The Michigan Carbon Works, Detroit, Mich.	Found	1.65	4 12	23.16	18 53	8.57	5 14	31.73	......	......	27 79	262
263	**Big 1**	Claimed	4.00	......	......	......	......	......	24.00	......	......	......	
	Nelson Morris & Co., Chicago, Ill.	Found	4.70	11 75	19.26	15 41	5.75	3 45	25.01	......	......	30 61	263
270	**Pure Ground Bone**	Claimed	5.00	......	......	......	......	......	20.85	......	......	......	
	L. T. Nye, Seville, O.	Found	4.80	12 00	13.51	10 81	7.60	4 56	21.11	......	......	27 37	270
273	**Pure Bone Meal**	Claimed	4.55	......	......	......	......	......	21.43	......	......	......	
	C. A. Standen, Elyria, O.	Found	4.70	11 75	19.97	15 98	4.53	2 72	24.50	......	......	30 45	273
274	**Tiger Bone Meal**	Claimed	4.50	......	......	......	......	......	22.00	......	......	......	
	The Western Union Chem. Co., Cleveland, O.	Found	4.10	10 25	13.41	10 73	8.40	5 04	21.81	......	......	26 02	274
288	**Clover Leaf**	Claimed	2.50	......	......	......	......	......	8.50	2.50	......	......	
	McWha & Sturgeon, Steubenville, O.	Found	2.50	6 25	5.39	4 31	5.61	3 37	11.00	*3.14	3 61	17 54	288
289	**Bone Meal**	Claimed	4.10	......	......	......	......	......	16.25	......	......	......	
	McWha & Sturgeon, Steubenville, O.	Found	4.40	11 00	7.66	6 13	9.74	5 84	17.40	......	......	22 97	289
290	**Fine Ground Bone**	Claimed	4.25	......	......	......	......	......	22.25	......	......	......	
	The Jones Fertilizing Co., Cincinnati, O.	Found	4.35	10 88	14.16	11 32	6.69	4 01	20.85	......	......	26 22	290

292	**Bone Meal**	Claimed	4.00						20.00				
	John Dorst, Pomeroy, O.	Found	2.75	6 88	13.64	10 91	7.21	4 33	20.85			22 12	292
298	**Great Eastern Pure Bone**	Claimed	2.00						22.00				
	The Great Eastern Fert. Co., Rutland, Vt.	Found	4.75	11 88	18.52	14 82	2.46	1 48	20.98			28 18	298
302	**Bone Meal**	Claimed	5.00		12.00		13.00		25.00				
	The Marietta Bone & Phos. Co., Marietta, O.	Found	3.80	9 50	8.79	7 03	11.18	6 71	19.97			23 24	302
327	**Big 2**	Claimed	2.50						27.00				
	Nelson Morris & Co., Chicago, Ill.	Found	2.10	5 25	25.12	20 10	5.14	3 08	30.26			28 43	327
328	**Fine Ground Bone**	Claimed	2.00						14.00				
	The Pacific Guano Co., Boston, Mass.	Found	2.10	5 25	15.52	12 42	3.41	2 05	18.93			19 72	328
330	**Pure Ground Bone**	Claimed	3.50						25.00				
	The Crocker Fert. & Chem. Co., Buffalo, N. Y.	Found	4.80	12 00	16.69	13 35	6.98	4 19	23.67			29 54	330
356	**Fine Ground Bone Meal**	Claimed	2.50						24.00				
	The M. Hamm Co., Washington C. H., O.	Found	5.25	13 12	11.16	8 93	10.52	6 31	21.68			28 36	356
367	**Superior Pure Ground Bone**	Claimed	4.50						21.00				
	The Bucyrus Fertilizer Co., Bucyrus, O.	Found	4,10	10 25	15.51	12 41	8.73	5 24	24.24			27 90	367
369	**Pure Ground Bone**	Claimed	4.00						20.00				
	The Jarecki Chemical Co., Sandusky, O.	Found	5.15	12 88	13.82	11 06	5.37	3 22	19.19			27 16	369
376	**Pig Foot Bone**	Claimed	4.00						20.00				
	The E.Rauh & Sons'Fert.Co.,Indianapolis,Ind.	Found	3.60	9 00	12.60	10 08	7.10	4 26	19.70			23 34	376
377	**Pure Ground Bone**	Claimed	2.00						22.00				
	M. E. Wheeler & Co., Rutland, Vt.	Found	2.90	7 25	24.10	19 28	3.60	2 16	27.70			28 69	377
379	**Ground Bone Meal**	Claimed	2.50						26.00				
	The Farmers' Union Fert.Works, Buffalo,N.Y.	Found	3.95	9 88	22.49	17 99	4.44	2 66	26.93			30 53	379
382	**Fine Ground Bone**	Claimed	3.00						21.00				
	The Bradley Fertilizer Co., Boston, Mass.	Found	2.35	5 88	14.80	11 84	5.47	3 28	20.27			21 00	382

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* From Sulphate.

TABLE VIII. — Bones — Concluded.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia.		Phosphoric Acid.					Potash (when included).		Total Value.	Record Number.
					In Fine Bone.		In Med. Bone.						
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.	Total per cent.	Per cent.	Value.		
394	**Superior Pure Bone with Potash**	Claimed	4.00	....	....	....	....	....	22.00	1.00	....	....	
	James McCallum & Co., Dayton, O...........	Found	4.45	11 12	13.41	10 73	7.70	4 62	21.11	1.68	1 76	28 23	394
397	**Darling's Pure Ground Bone**................. ...	Claimed	3.00	....	....	....	....	....	24.00	....	....	....	
	Darling & Company, Chicago, Ill........ ...	Found	3.85	9 62	19.59	15 67	2.80	1 68	22.39	....	....	26 97	397
398	**Darling's Ground Raw Bone**........	Claimed	4.00	....	....	....	....	....	21.00	....	....	....	
	Darling & Company, Chicago, Ill............	Found	5.00	12 50	10.35	8 28	11.91	7 14	22.26	....	....	27 93	398
400	**Bone Meal**	Claimed	4.00	....	....	....	....	....	21.00	....	....	....	
	George A. Bell, Wheelersburg, O.	Found	5.40	13 50	14.70	11 76	5.57	3 34	20.27	....	....	28 60	400
410	**Quinnipiac Bone Meal**...	Claimed	3.00	....	....	....	....	....	20.00	....	....	....	
	The Quinnipiac Co., New York, N. Y	Found	2.05	5 12	12.21	9 77	3.33	2 00	15.54	....	....	16 89	410
413	**Cumberland Extra Fine Ground Bone**	Claimed	2.00	....	....	....	....	....	14.00	....	....	....	
	The Cumberland Bone-Phos. Co., Boston, Mass.	Found	2.70	6 75	11.65	9 32	2.22	1 33	13.87	....	....	17.40	413
414	**Pure Raw Bone**..................	Claimed	4.60	....	....	....	....	....	22.00	....	....	....	
	The Alliance Fertilizer Co., Alliance, O......	Found	4.95	12 38	11.22	8 98	10.79	6 47	22.01	....	....	27 83	414
421	**W. & C. Carteret Ground Bone**......	Claimed	2.00	....	....	....	....	....	14.00	....	....	....	
	The Williams & Clark Fert. Co., New York, N.Y.	Found	2.30	5 75	16.04	12 83	2.83	1 70	18.87	....	....	20 28	421
423	**Pure Raw Bone Meal**............	Claimed	3 25	....	....	....	....	....	23.00	....	....	....	
	Lister's Agr. Chem. Works, Newark, N. J.....	Found	3.65	9 12	16.18	12 93	7.62	4 57	23.80	....	....	26 62	423

428	**IXL Ground Bone**	Claimed	2.25	......	....	......	....	....	11.45	....	....	... ...	
	The Springfield Fert. Co., Springfield, O	Found	2.70	6 75	8.32	6 66	3.57	2 14	11.89	....	....	15 55	428
436	**Fine Raw Bone Meal**	Claimed	4.50	......	......	.. ....	.. ....	....	22.00	....	....	... ...	
	The E.Rauh & Sons'Fert.Co.,Indianapolis,Ind.	Found	3.80	9 50	16.32	13 06	2.55	1 53	18.87	.... .	....	24 09	436

TABLE IX.— POTASH SALTS.

Record Number.	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Potash.		Total Value.	Record Number.
			Per cent.	Value.		
251	**No. 1 Syndicate Muriate of Potash**	Claimed	38.00			
	James Bonday, Jr. & Co.. Baltimore, Md	Found	51.48	$59 20	$59 20	251
368	**Old Reliable German Kainit**	Claimed	11.00			
	James Bonday, Jr. & Co., Baltimore, Md	Found	12.48	14 35	14.35	368

LIST OF COMMERCIAL FERTILIZERS PROPERLY LICENSED

And offered for sale in Ohio in 1898 but samples of which were *not found* by the Secretary or Deputies on the markets, hence they have not been analyzed, and their valuations do not appear in this report.

MANUFACTURERS' CLAIMS.

Address of Manufacturer and Name of Fertilizer.	Ammonia.	Phosphoric Acid.			Potash.
		Available.	Insoluble.	Total.	
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
The Alliance Fertilizer Co., Alliance, O.—					
Bone Black, Phosphate and Potash	0.75-1.25	7.00- 8.00	1.00-2.00	8.00-10.00	1.50-2.00
Fine Ground Alkaline Bone	0.50-1.00	8.00-10.00	2.00-4.00	10.00-14.00	....
The Armour Fertilizer Works, Chicago, Ill.—					
All Soluble	3.50-4.50	8.00-10.00	1.50-2.50	10.00-12.00	7.00-8.00
The Baltimore Guano Co., Baltimore, Md.—					
Baltimore W. & G. Special	1.00-2.00	9.00-11.00	2.00	11.00-13.00	2.00-3.00
Dissolved Bone Phosphate	....	8.00-14.00	2.00	10.00-16.00	....
Baugh & Sons Co., Philadelphia, Pa.—					
Double Eagle Phosphate	2.50	8.00	2.50	10.50	0.50
Raw Bone Super Phosphate	2.00	8.00	3.00	11.00	1.00
D. Blocher & Co., Gettysburg, Pa.—					
Dissolved Raw Bone and Potash	2.50-3.00	9.00-11.00	2.50-3.25	11.50-14.25	2.00-3.00
Ammoniated Soluble Bone Phosphate	0.50-1.00	8.00-10.00	2.00-3.00	10.00-13.00	1.50-2.50
Jas. Bonday, Jr. & Co., Baltimore, Md.—					
No. 1 Syndicate Sulphate of Potash	....	....	....	....	45.00-48.00

LIST OF COMMERCIAL FERTILIZERS PROPERLY LICENSED — Continued.

MANUFACTURERS' CLAIMS.

Name of Fertilizer and Address of Manufacturer.	Ammonia.	Phosphoric acid.			Potash.
		Available.	Insoluble.	Total.	
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
The Bowker Fertilizer Co., Boston, Mass.—					
Ammoniated O. I. O. Phosphate	0.75-1.75	11.00-13.00	....	13-00-15.00	....
Ammoniated Food for Flowers	2.00-3.00	4.00- 6.00	....	6.00- 8.00	2.00-3.00
The Bradley Fertilizer Co., Boston, Mass.—					
Complete Manure	4.00	8.00	1.00	9.00	7.00
The Bucyrus Fertilizer Co., Bucyrus, O.—					
Super Phosphate with Potash	2.00-3.00	....	....	10.00-12.00	1.00-1.50
Dissolved Bone No. 2	....	....	....	8.00-10.00	....
The Canton Fertilizer Co., Canton, O.—					
Half and Half	2.00-3.00	....	....	12.00-14.00	1.00-1.50
The Chemical Co. of Canton, Baltimore, Md.—					
Harrow Brand	0.50-1.00	10.00-12.00	1.00-2.00	11.00-14.00	1.00-2.00
The Chicago Fertilizer Co., Chicago, Ill.—					
Bone, Blood and Potash	1.50	9.00	1.00	10.00	2.00
Chicago Bone Meal	2.00	....	....	20.00	....
The Clark's Cove Fertilizer Co., Boston, Mass.—					
Sunflower Bone Meal	2.00-4.00	....	....	14.00-18.00	....
Defiance Complete Manure	1.00-2.00	6.00- 8.00	1.00-2.00	8.00-12.00	2.00-3.00
King Philip Alkaline Guano	1.50-2.00	6.00- 8.00	1.00-2.00	7.00-10.00	3.00-4.00
Unicorn Ammoniated Super Phosphate	2.25-3.00	8.00-10.00	....	10.00-12.00	2.25-3.00

The Cleveland Dryer Co., Cleveland, O.—					
Forest City Ammo. Bone Super Phosphate with Potash	3.00–4.00	9.00–10.00	....	11.00–12.00	3.00–4.00
Bone and Phosphate Mixture	2.50–3.50	8.00–10.00	....	15.00–16.00	....
The Columbus Phosphate Co., Columbus, O.—					
Capital City Ground Bone	3.00	....	....	25.00–30.00	....
Capital City Special Club Formula	1.00	12.00	....	15.00	3.00
The Crocker Fertilizer & Chemical Co., Buffalo, N. Y.—					
Potato, Hop and Tobacco Phosphate	2.50	10.00	1.00	11.00	3.25
Ammoniated Bone Superphosphate	3.50	10.00	1.00	11.00	1.08
Superior Alkaline Bone	....	11.00	1.00	12.00	1.35
Pure Ground Bone Meal	2.50	....	....	26.00	....
Crocker's Phosphate	1.50	10.00	1.00	11.00	1.76
Crocker's Niagara Phosphate	....	11.50	1.00	12.50	....
High Grade Cereal Guano	1.00	8.00	1.00	9.00	2.00
The Cumberland Bone-Phosphate Co., Boston, Mass.—					
Cumberland Superphosphate	2.50	8.00	2.00	10.00	2.00
Cumberland Potato Phosphate	1.25	8.00	2.00	10.00	3.00
The Currie Fertilizer Co., Louisville, Ky.—					
Climax Tobacco and Potato Grower	0.75	11.00	1.50	....	2.00
Wheat Grower	0.50	10.00	3.00	13.00	1.25
Fine Ground Raw Bone Meal	2.00	....	....	22.00	....
Darling & Company, Chicago, Ill.—					
Sure Winner Brand	1.50–2.50	7.00– 9.00	4.00–5.00	11.00–14.00	3.00–4.00
Farmers' Favorite Brand	3.50–4.50	8.00– 9.00	5.00–5.50	13.00–14.50	4.00–5.00
The Detrick Fertilizer and Chemical Co., Baltimore, Md.—					
Ammoniated Bone Phosphate	1.50–2.00	9.00–12.00	2.00–3.00	11.00–15.00	1.00–2.00
Wheat Fertilizer	1.25–1.75	10.00–13.00	1.00–3.00	11.00–15.00	....
Imperial Compound	1.00–1.50	9.00–11.00	1.50–2.50	10.50–13.50	1.00–1.50
Alkaline Bone	....	10.00–12.00	1.00–2.00	11.00–14.00	2.00–2.50
Louis F. Detrick, Baltimore, Md.—					
Sockless and Shoeless Phosphate	1.25	8.00	3.00	11.00	1.25
Wooldridge's Special Potato Fertilizer	2.00–2.50	8.00– 9.00	3.00–4.00	11.00–13.00	5.00–6.00

List of Commercial Fertilizers Properly Licensed — Continued.

Manufacturers' Claims.

Address of Manufacturer and Name of Fertilizer.	Ammonia.	Phosphoric Acid.			Potash.
		Available.	Insoluble.	Total.	
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Farmers' Cash Union, New Pittsburg, O.—					
Muriate of Potash	....	....	....	....	50.00
Dissolved Bone	....	11.00	1.00	12.00	....
Tankage	7.00	9.00	4.00	16.00	....
The Farmers' Union Fertilizer Works, Buffalo, N. Y.—					
Potato, Tobacco and Truck Manure	2.25	9.00	1.00	10.00	4.00
Dissolved Bone Phosphate	....	14.00	1.00	15.00	....
R. K. Giffen & Co., John A. Zorn, Receiver, Wheeling, W. Va.—					
Ohio Valley Phosphate	1.00–2.00	7.00– 9.00	1.00–2.00	8.00–11.00	1.08–1.63
The Globe Fertilizer Co., Louisville, Ky.—					
Globe Potato Grower	4.00–5.00	8.00– 9.00	1.00–2.00	9.00–11.00	4.00–5.00
Globe Soluble Vegetable Manure	3.00–4.00	8.00– 9.00	1.00–2.00	9.00–11.00	3.00–4.00
Kentucky Standard Tobacco Grower	3.00–4.00	8.00– 9.00	1.00–2.00	9.00–11.00	3.00–4.00
The Great Eastern Fertilizer Co., Rutland, Vt.—					
U. S. Standard Tennessee Wheat Grower	....	10.00–12.00	1.00–2.00	12.00–14.00	0.50–1.00
Griffith & Boyd, Baltimore, Md.—					
S. C. and C. Guano	....	4.00	....	14.00	2.00
The M. Hamm Co., Washington, C. H., O.—					
O. K.	6.00–8.00	....	....	16.00–18.00	....

Earl Herrick, Successor to Herrick, Harris & Co., Cleveland, O.—					
Bone Meal	4.50-5.00	....	....	20.00-21 00	....
Acid Phosphate	....	....	....	11.00-12.00	....
S. M. Hess & Bro., Philadelphia, Pa.—					
Emperor Phosphate	....	10.00	2.00	12.00	1.00
Potato and Truck Manure	2.00	8.00	1.00	9.00	6.00
Wheat and Grass Manure	1.00	9.00	2.00	9.00	1.00
The International Seed Co., Rochester, N. Y.—					
International Electric Guano	1.00	8.00	2.00	10.00	2.00
S. Kaufman & Sons, Indianapolis, Ind.—					
Special Wheat and Corn Fertilizer	3.01	7.40	2.00	9.40	1.00
Old Reliable Brand Half and Half	3.00-4.00	10.00-12.00	4.00	14.00-16.00	....
Geo. W. Mace, Greenville, O.—					
Tip Top Super Phosphate	....	10.00-12.00	2.00-3.00	12.00-15.00	....
Jas. McCallum & Co., Dayton, O.—					
Raw Bone and Phosphate	2.00-3.00	10.00-12.00	....	15.00-17.00	1.00- 2.00
The Milsom Rendering and Fertilizer Co., Buffalo, N. Y.—					
Potato Special	2.00-4.00	8.00-10.00	2.00-3.00	10.00-13.00	8.00-10.00
Bone Meal	....	....	....	....	....
L. Morris, Sabina, O.—					
Pleasant Valley	5.00	10.00	3.00	13.00	0.16
The Newburgh Fertilizer Co., Cleveland, O.—					
Acme Bone	2.50-3.50	9.00-10.00	9.00-10.00	18.00-20.00	1.00-2.00
Champion Fertilizer	3.50-4.50	10.00-11.00	....	12.00-13.00	1.00-2.00
Ammoniated Phosphate	1.50-2.50	9.00-10.00	....	10.00-11.00	1.00-2.00
The Northwestern Fertilizing Co., Chicago, Ill.—					
Corn and Wheat Grower	2.50-3.00	10.00-12.00	2.00-3.00	12 00-15.00	1.00-1.50
The Oakfield Fertilizer Co., Buffalo, N. Y.—					
Raw Bone	3.50-4.50	....	....	25.00	....

List of Commercial Fertilizers Properly Licensed — Continued.

Manufacturers' Claims.

Address of Manufacturer and Name of Fertilizer.	Ammonia.	Phosphoric Acid.			Potash.
		Available.	Insoluble.	Total.	
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
The Packers' Union Fertilizer Co., New York, N. Y.—					
Pure Ground Bone	2.00–3.00	......	......	22.00–25.00	......
Pacific Guano Co., New York, N. Y.—					
Pure Bone Meal	3.00–5.00	......	......	20.00–25.00	......
Ground Bone and Potash	2.25–3.25	......	......	8.00–12.00	2.00–3.00
The Pittsburg Provision Co., Pittsburg, Pa.—					
Pure Bone and Potash (Tobacco Special)	3.00–4.00	12.00–16.00	2.00–4.00	16.00–20.00	3.00–4.00
The Powell Fertilizer and Chemical Co., Baltimore, Md.—					
Bone and Potash Fertilizer	......	10.00	2.00	12.00	2.00
Red Bag Fertilizer	1.25	8.00	2.00	10.00	1.00
The Quinnipiac Co., New York, N. Y.—					
Uncas Bone Meal	2.00–4.00	......	......	14.00–18.00	......
Special Potato	1.50–2.00	6.00–8.00	1.00–3.00	7.00– 9.00	5.00–6.00
Plain Super Phosphate	......	10.00–12.00	2.00–3.00	12.00–15.00	......
The Rasin Fertilizer Co., Baltimore, Md.—					
Dissolved Bone	2.00	10.00	1.00	11.00	......
N. Rassel & Co., Toledo, O.—					
Maumee Valley Fertilizer	6.40	8.05	4.02	12.07	0.54
Pure Ground Bone	2.75	......	......	15.35	0.44

The E. Rauh & Sons, Fertilizer Co., Indianapolis, Ind.—					
Half Pure Raw Bone and Half Pure Bone Phosphate	2.00-3.00	....	....	11.00	....
The Read Fertilizer Co., New York, N. Y.—					
Leader Guano	1.00	7.00	1.00	8.00	2.00
Read's Standard	1.00	8.00	1.00	9.00	4.00
Farmers' Friend	2.50	9.00	1.00	10.00	2.00
Dissolved Bone	....	12 00	1.00	13.00	....
Ground Bone	2.50	....	....	23.00	....
Bone and Potash or Alkaline Bone	....	10.00	1.00	11.00	3.00
John S. Reese & Co., Baltimore, Md.—					
Half and Half	1.00	8.00	1.00	9.00	1.00
John Ruehle, Defiance, O.—					
Defiance Fertilizer	3.00	6.00- 7.00	4.00-8.00	12.00-14.00	1.00-2.00
The Scientific Fertilizer Co., Pittsburg, Pa.—					
Pure Raw Bone	4.00-5.00	....	....	22.00-25 00	....
Bone and Meat	4.00	....	....	13.00-15.00	....
Economy Fertilizer	2.50-3.00	8.00	1.00-2.00	9.00-10.00	4.00-5.00
Potato Fertilizer	3.50-4.00	7.50	1.50-2.00	9.00-10.00	6.00-7.00
Sharpless & Carpenter, Philadelphia, Pa.—					
No. 2 Grain and Grass	0.50-1.50	10.00-12.00	....	....	1.00-2.00
Soluble Bone and Potash	....	10.00-12.00	....	....	2.00-4.00
Acid Phosphate	....	14.00-16.00	....	....	....
The Springfield Fertilizer Co., Springfield, O.—					
Tobacco and Vegetable	4.50-5.00	6.00-8.00	0.25-0.50	7.00	7.00-9.00
J. L. & H. Stadler, Cleveland, O.—					
Potato Manure	3.00-4.00	6.00-7.00	2.00-3.00	9.00-10.00	5.00-6.00
The Star Fertilizer Co., Cleveland, O.—					
Star Pure Bone	3.50-4.50	....	....	18.00-20.00	....
The Susquehanna Fertilizer Co., Baltimore, Md.—					
XXV Phosphate	1.25-2.00	8.00-10.00	2.00-4.00	....	1.00-2.00

LIST OF COMMERCIAL FERTILIZERS PROPERLY LICENSED — Concluded.

MANUFACTURERS' CLAIMS.

Name of Fertilizer and Address of Manufacturer.	Ammonia.	Phosphoric Acid.			Potash.
		Available.	Insoluble.	Total.	
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
The I. P. Thomas & Son Co., Philadelphia. Pa.—					
Potato Manure	3.00	9.00	2.00	11.00	6.00
Farmers' Choice	2.00	9.50	2.00	11.50	2.00
Special Corn Fertilizer	....	10.00	2.00	12.00	6.50
The Tygert-Allen Fertilizer Co., Philadelphia, Pa.—					
Prairie Bone Meal	3.00	....	....	17.00	....
Special Potato	2.50	6.00	2.00	8.00	6.00
Soluble Bone and Potash	....	10.00	1.50	11.50	2.00
The Virginia-Carolina Chemical Co., Richmond, Va.—					
Beef, Blood and Bone	2.00	....	....	8.00	1.00
The Walker Fertilizer Co., Clifton Springs, N. Y.—					
Excelsior Brand, a Food for House Plants	7.00	12.00	....	....	11.00
Walker, Stratman & Co., Pittsburg, Pa.—					
Pure Raw Bone	4.00–5.00	....	....	22.00–25.00	....
Potato Special	3.50–4.50	7.00– 8.00	2.00–3.00	9.00–10.00	6.00–7.00
Big Bonanza	2.50–3.50	8.00– 9.00	1.00–2.00	9.00–10.00	4 00–5.00
Bone and Meat	4.00–5.00	....	....	13.00–15.00	....
Tobacco Special	3.00–4.00	7.00– 8.00	4.00–5.00	11.00–12.00	4.00–5.00
The Walton Fertilizer Co., Warren, O.—					
Pure Bone and Potash	2.00	....	....	12.00	2.00

M. E. Wheeler & Co., Rutland, Vt.—					
Havana Tobacco Grower	3.50	6.00	1.00	7.00	7.00
The Williams & Clark Fertilizer Co., New York, N. Y.—					
Universal Ammoniated Dissolved Bone	2.00-3.00	8.00-11.00	1.00-2.00	9.00-13.00	2.00-3.00
Americus Pure Bone Meal	3.00-5.00	....	....	20.00-25.00	....
The Zell Guano Co., Baltimore, Md.—					
Pure Ground Raw Bone	4.00-5.00	....	....	20.00-25.00	....
Special Compound for Potatoes, Etc.	3.00-4.00	8.00-10.00	2.00-3.00	10.00-12.00	4.00-5.00
Ammoniated Bone Superphosphate	2.50-3.50	8.00-10.00	2.00-3.00	10.00-12.00	2.50-3.50
Calvert Guano	0.75-1.50	9.00-11.00	2.00-3.00	11.00-13.00	1.50-2.50

INDEX OF MANUFACTURERS,

WITH LIST OF BRANDS LICENSED FOR THE YEAR ENDING DECEMBER 31, 1898.

The Alliance Fertilizer Co., Alliance, O.

No. 386. Farmers' Friend.
No. 387. Soluble Bone and Potash.
No. 414. Pure Raw Bone
No. 415. Button Bone.
No. —. Bone Black, Phosphate and Potash.
No. —. Fine Ground Alkaline Bone..

The American Reduction Co., Pittsburg, Pa.

No. 139. Iron City.
No. 140. Common Sense.
No. 141. Vegetable Manure.
No. 174. Fine Ground Bone

The Armour Fertilizer Works, Chicago, Ill.

No. 11. Acidulated Bone Meal.
No. 12. Bone Meal.
No. 13. Ammoniated Bone with Potash.
No. 14. Grain Grower.
No. 15. Acid Phosphate.
No. 25. Fruit and Root Crop Special.
No. 102. Bone, Blood and Potash.
No. 167. Phosphate and Potash.
No. 208. Raw Bone Meal.
No. 297. Bone and Blood
No. —. All Soluble.

H. J. Baker & Bro., 93 William St., New York, N. Y.

No. 313. Standard UNXLD Fertilizer.

The Baltimore Guano Co., Baltimore, Md.

No. 259. Game Guano
No. 260. Farmers' Alkaline Bone
No. 431. Farmers' Dissolved Bone.
No. 432. Fish Guano.
No. —. Baltimore W. & G. Special
No. —. Dissolved Bone Phosphate.

Geo. S. Bartlett, Successor to The Cincinnati Des. Co., Cincinnati, O.

No. 323. Tobacco and Potato Fertilizer.
No. 362. Indian Brand, Pure Acidulated Bone.
No. 363. Indian Brand, Ohio Valley Phosphate.
No. 364. Indian Brand, Gilead Phosphate.

Baugh & Sons Co., Philadelphia, Pa.

No. 291. High Grade Super Phosphate.
No. —. Double Eagle Phosphate.
No. —. Raw Bone Super Phosphate.

George A. Bell, Wheelersburg, O.

No. 400. Bone Meal.
No. 401. Fine Bone.

D. Blocher & Co., Gettysburg, Pa.

No. 336. High Grade Super Phosphate of Bone.
No. —. Dissolved Raw Bone and Potash.
No. —. Ammoniated Soluble Bone Phosphate.

James Bonday, Jr., & Co., Baltimore, Md.

No. 251. No. 1 Syndicate Muriate of Potash.
No. 368. Old Reliable German Kainit.
No. —. No. 1 Syndicate Sulphate of Potash.

The Bowker Fertilizer Co., Boston, Mass.

No. 24. Dissolved Bone Phosphate with Potash.
No. 40. Harvest Bone
No. 41. Bone Meal.
No. 42. Dissolved Bone Phosphate.
No. 101. Potato and Vegetable Phosphate.
No. 134. Sure Crop Phosphate.
No. 135. Superphosphate with Potash.
No. 136. Ammoniated Dissolved Bone.
No. 205. Special Onion Fertilizer or 10% Manure.
No. 312. Wheat Grower.
No. —. Ammoniated O. I. O. Phosphate.
No. —. Ammoniated Food for Flowers.

The Bradley Fertilizer Co., Boston, Mass.

No. 2. Abattoir Bone Dust
No. 3. Alkaline Bone.
No. 66. Niagara Phosphate.
No. 67. Dissolved Bone, Justice Brand.
No. 68. Acid Phosphate.
No. 175. Circle Brand, Ground Bone with Potash.
No. 176. Potato and Root Phosphate.
No. 199. B. D. Sea Fowl Guano.
No. 200. Dissolved Bone with Potash.
No. 382. Fine Ground Bone.
No. 393. Potato Fertilizer.
No. —. Complete Manure.

The Bucyrus Fertilizer Co., Bucyrus, O.

No. 73. Dissolved Bone.
No. 115. Buckeye Wheat Grower.
No. 116. Ohio Farmers' Phosphate.
No. 367. Superior Pure Ground Bone.
No. —. Super Phosphate with Potash.
No. —. Dissolved Bone No. 2.

The Canton Fertilizer Co., Canton, O.

No. 239. Superior Pure Raw Bone.
No. 240. Bone and Meat.
No. 241. Peerless Bone Phosphate.
No. 438. Dissolved Bone and Potash.
No. —. Half and Half.

The Chemical Company of Canton, Baltimore, Md.

No. 233. Baker's Special W. C. & G. Mixture.
No. 234. Soluble Bone and Potash..
No. 235. Baker's Dissolved Bone Phosphate.
No. —. Harrow Brand.

The Chicago Fertilizer Co., Chicago, Ill.

No. —. Bone, Blood and Potash.
No. —. Chicago Bone Meal.

The Clark's Cove Fertilizer Co., Boston, Mass.

No. 8. Sovereign Acid Phosphate.
No. 9. Potato Phosphate.
No. 10. Triumph Bone and Potash.
No. —. Sunflower Bone Meal
No. —. Defiance Complete Manure
No. —. King Philip Alkaline Guano.
No. —. Unicorn Ammoniated Super Phosphate.

The Cleveland Dryer Co., Cleveland, O.

No. 85. Buckeye Ammoniated Bone Super Phosphate.
No. 86. Ohio Seed Maker with Potash.
No. 87. XXX Phosphate.
No. 88. XXX Phosphate with Potash.
No. 89. Horsehead Phosphate.
No. 90. Phospho Bone.
No. 91. Potato and General Crop Fertilizer.
No. 216. Forest City Ammoniated Bone Super Phosphate.
No. 217. Ohio Seed Maker.
No. 218. Superior Bone Meal.
No. 365. Ammoniated Dissolved Bone.
No. 383. Square Bone.
No. —. Forest City Ammoniated Bone Super Phosphate with Potash.
No. —. Bone and Phosphate Mixture.

The Cleveland Provision Co., Cleveland, O.

No. 248. Packing House Fertilizer.

The Coal Grove Fertilizer Co., Coal Grove, O.

No. 424. Coal Grove Fertilizer.

The Columbus Phosphate Co.. Columbus, O.

No. 246. Capital City Wheat Grower.
No. 247. Capital City Dissolved Bone and Potash.
No. 339. Capital City Grain and Grass Grower.
No. —. Capital City Ground Bone.
No. —. Capital City Special Club Formula.

The Continental Fertilizer Co., Nashville, Tenn.

No. 303. Bear Wheat Grower
No. 304. Bear Dissolved Bone.
No. 375. Bear Beef Blood and Bone.

Henry Conway, Marietta. O.

No. 258. Acid Phosphate

Josiah Cope & Co., Lincoln University, Pa.

No. 284. Try Me Bone Phosphate.
No. 285. Ammoniated Bone Phosphate.
No. 286. Soluble Bone and Potash.
No. 287. Acidulated Phosphate.
No. 357. Wheat and Grass Special.

The Crocker Fertilizer & Chemical Co., Buffalo, N. Y.

No. 96. General Crop Phosphate.
No. 225. New Rival Ammoniated Superphosphate.
No. 226. Special Potato Manure.
No. 227. Universal Grain Grower.
No. 228. Complete Bone Black Fertilizer.
No. 229. Stevens' Special Wheat and Corn
No. 230. I. P. Felch Buffalo Fert. for Wheat, Oats and Buckwheat.
No. 245. Vegetable Bone Superphosphate.
No. 329. Ammoniated Wheat and Corn Phosphate.
No. 330. Pure Ground Bone.
No. 331. Ammoniated Practical Phosphate.
No. 332. Erie Fertilizer.
No. —. Potato, Hop and Tobacco Phosphate.
No. —. Ammoniated Bone Superphosphate.
No. —. Superior Alkaline Bone.
No. —. Pure Ground Bone Meal.
No. —. Phosphate.
No. —. Niagara Phosphate.
No. —. High Grade Cereal Guano.

The Cumberland Bone-Phosphate Co., Boston, Mass.

No. 16. Seeding Down Fertilizer.
No. 17. Dissolved Bone Phosphate.
No. 18. Bone and Potash.
No. 412. Guano.
No. 413. Extra Fine Ground Bone.
No. —. Superphosphate.
No. —. Potato Phosphate.

The Currie Fertilizer Co., Louisville, Ky.

No. 60. Soluble Bone.
No. 61. Corn and Wheat Special.
No. 97. Dissolved Bone.
No. 129. Special for Corn and Oats.
No. —. Climax Tobacco and Potato Grower.
No. —. Wheat Grower.
No. —. Fine Ground Raw Bone Meal.

Darling & Company, Chicago, Ill.

No. 396. Chicago Brand.
No. 397. Pure Ground Bone.
No. 398. Ground Raw Bone.
No. —. Sure Winner Brand.
No. —. Farmers' Favorite Brand.

The Detrick Fertilizer & Chemical Co., Baltimore, Md.

No. 307. Soluble Bone Phosphate.
No. —. Ammoniated Bone Phosphate.
No. —. Wheat Fertilizer.
No. —. Imperial Compound.
No. —. Alkaline Bone.

Louis F. Detrick, Baltimore, Md.

No. 121. XXtra Acid Phosphate.
No. 122. Kangaroo Komplete Kompound.
No. 123. Bone and Potash Mixture.
No. 293. Orchilla Guano.
No. —. Sockless and Shoeless Phosphate.
No. —. Wooldridge's Special Potato Fertilizer.

John Dorst, Pomeroy. O.

No. 292. Bone Meal.

Farmers' Cash Union, New Pittsburg, O.

No. —. Muriate of Potash.
No. —. Dissolved Bone.
No. —. Tankage.

Farmers' Union Fertilizer Works. Buffalo, N. Y.

No. 242. Standard Phosphate.
No. 243. Club and Grange Formula.
No. 325. Dissolved Bone and Potash.
No. 326. Erie Queen.
No. 379. Ground Bone Meal
No. —. Potato, Tobacco and Truck Manure.
No. —. Dissolved Bone Phosphate.

L. Frank & Sons. Zanesville, O.

No. 158. Pure Bone Meal.
No. 159. Dissolved Bone.

R. K. Giffin & Co., John A. Zorn, Receiver, Wheeling, W. Va.

No. —. Ohio Valley Phosphate.

The Globe Fertilizer Co., Louisville. Ky.

No. 64. Bone Dust.
No. 65. Big Four Phosphate.
No. 72. Bone and Potash.
No. 311. Progress Corn and Wheat Grower
No. 345. Big Four Tobacco Grower.
No. 346. Eagle Corn and Wheat Grower

The Globe Fertilizer Co., Louisville, Ky.— Concluded.

No. 392. Wheat Grower.
No. —. Potato Grower.
No. —. Soluble Vegetable Manure.
No. —. Kentucky Standard Tobacco Grower.

The Great Eastern Fertilizer Co., Rutland, Vt.

No. 27. Corn Phosphate.
No. 28. Wheat Special.
No. 29. Soluble Bone and Potash.
No. 189. English Wheat Grower.
No. 190. Dissolved Bone.
No. 298. Pure Bone.
No. 359. Vegetable, Vine and Tobacco.
No. —. U. S. Standard Tennessee Wheat Grower

Griffith & Boyd, Baltimore, Md.

No. —. S. C. & C. Guano.

The M. Hamm Co., Washington C. H., O.

No. 231. Dissolved Bone with Potash.
No. 294. Hamm's Special.
No. 353. Acidulated Bone.
No. 354. Dissolved Bone.
No. 355. Economy.
No. 356. Fine Ground Bone Meal.
No. —. O. K..

Earl Herrick, Successor to Herrick, Harris & Co., Cleveland, O.

No. 142. Linndale.
No. 143. Corn Grower.
No. 144. Pride of Ohio.
No. 145. Special Potato Bone and Potash.
No. —. Bone Meal.
No. —. Acid Phosphate.

S. M. Hess & Bro., Philadelphia, Pa.

No. 117. Keystone Bone Phosphate.
No. 118. Soluble Bone
No. 119. Ohio Special Potato Grower.
No. 120. Acid Phosphate.
No. 213. Ammoniated Bone Super Phosphate.
No. 214. Ground Bone
No. —. Emperor Phosphate.
No. —. Potato and Truck Manure.
No. —. Wheat and Grass Manure.

J. W. Hunter, Baltimore, Md.

No. 22. T. & P. Superphosphate.
No. 23. T. & P. with Potash.
No. 57. C. & G. Phosphate.
No. 111. Q. & L. Ammoniated Phosphate.

The International Seed Co., Rochester, N. Y.

No. 204. Grain and Grass Fertilizer.
No. 422. Potato and Truck Manure.
No. 429. A 1 Special Manure.
No. —. Electric Guano.

The Jarecki Chemical Co., Sandusky, O.

No. 34. C. O. D. Phosphate.
No. 35. Bone and Phosphate Mixture.
No. 36. Dissolved Bone Black, Wheat Special.
No. 43. Lake Erie Fish Guano.
No. 44. O. K. Fertilizer
No. 45. Number One Fish Guano.
No. 160. Fish and Potash, Tobacco and Potato Food.
No. 170. Fish and Potash, Grain Special..
No. 343. Double Fish Guano.
No. 369. Pure Ground Bone.

The Jones Fertilizing Co., Cincinnati, O.

No. 37. Tobacco and Potato Grower.
No. 38. Jones' Reliable.
No. 39. Jewel.
No. 58. Bone and Potash.
No. 59. Miami Valley.
No. 290. Fine Ground Bone.
No. 347. Acidulated Bone.
No. 390. Ammoniated Bone.

S. Kaufman & Sons, Indianapolis, Ind.

No. 315. Soluble Bone and Potash.
No. —. Special Wheat and Corn Fertilizer.
No. —. Old Reliable Brand Half and Half.

C. R. Lawwill, Manchester, O.

No. 435. Farm and Fruit Fertilizer.

The Lazaretto Guano Co., Baltimore, Md.

No. 314. Critchfield's Standard Phosphate.
No. 333. Critchfield's Boneine.
No. 334. Critchfield's Fish Guano.
No. 335. Critchfield's Button Bone Fertilizer.
No. 378. Critchfield's Wheat and Grass Phosphate.

Lister's Agricultural Chemical Works, Newark, N. J.

No. 100. Ammoniated Dissolved Bone.
No. 423. Pure Raw Bone Meal.

The Loudenback Fertilizer Co., Urbana, O.

No. 98. Urbana Sweepstakes Bone.
No. 319. Urbana Bone Phosphate and Potash.
No. 320. Urbana Animal Tankage and Guano No. 1.
No. 321. Urbana Acidulated Bone and Potash.
No. 322. Urbana Ammoniated Bone.
No. 348. Urbana Acidulated Bone.
No. 349 Urbana Animal Tankage and Guano..

George W. Mace, Greenville, O.

No. 337. Dissolved Bone Phosphate and Potash.
No. 402. Big Crop Bone Phosphate and Potash.
No. —. Tip Top Super Phosphate.

James McCallum & Co., Dayton, O.

No. 103. High Grade Tobacco and Potato Special.
No. 104. Ruby.
No. 105. Competitor .
No. 186. Ammoniated Dissolved Bone.
No. 187. Spot Cash .
No. 188. Miami.
No. 394. Superior Pure Bone with Potash.
No. —. Raw Bone and Phosphate.

McLean, Dahl & Co., Washington C. H., O.

No. 99. Leader .
No. 405. Special .

McWha & Sturgeon, Steubenville, O.

No. 288. Clover Leaf.
No. 289. Bone Meal.

The Marietta Bone and Phosphate Co., Marietta, O.

No. 299. Favorite.
No. 300. Dissolved Bone
No. 301. Hustler.
No. 302. Bone Meal.

Michigan Carbon Works, Detroit, Mich.

No. 46. Homestead a Bone Black Fertilizer.
No. 47. Red Line Ammoniated Phosphate.
No. 48. Red Line Complete Manure.
No. 49. Acid Phosphate.
No. 112. Banner Raw Bone.
No. 173. Jarves Drill Phosphate
No. 195. Homestead Potato Grower.
No. 203. Red Line Phosphate with Potash
No. 252. Homestead Tobacco Grower.
No. 261. Banner Dissolved Bone.
No. 262. Desiccated Bone.
No. 305. Homestead Vegetable Grower.

The Milsom Rendering and Fertilizer Co., Buffalo, N. Y.

No. 82. Wheat, Oats and Barley.
No. 83. Erie King.
No. 84. Dissolved Bone.
No. 113. Buffalo Guano.
No. 147. Vegetable Bone Fertilizer.
No. 148. Dissolved Bone and Potash
No. 149. Cyclone Bone.
No. 164. Buffalo Fertilizer.
No. 183. Potato, Hop and Tobacco.
No. 207. Corn Fertilizer
No. —. Potato Special.
No. —. Bone Meal.

L. Morris, Sabina, O.

No. —. Pleasant Valley.

Nelson Morris & Co., Chicago, Ill.

No. 182. Big 4
No. 263. Big 1.
No. 264. Big 3.
No. 327. Big 2.
No. 352. Big 5

The Newburgh Fertilizer Co., Cleveland, O.

No. 238. Western Reserve Fertilizer.
No. —. Acme Bone.
No. —. Champion Fertilizer.
No. —. Ammoniated Phosphate.

Niagara Fertilizer Works, Buffalo, N. Y.

No. 150. Potato, Tobacco and Hop Fertilizer.
No. 151. Wheat and Corn Producer.
No. 265. Grain and Grass Grower.
No. 266. Queen City Phosphate.

The Northwestern Fertilizing Co., Chicago, Ill.

No. 19. Pure Ground Bone.
No. 20. Acidulated Bone.
No. 21. Quick Acting Phosphate.
No. 62. Challenge Corn Grower.
No. 63. Dissolved Bone Phosphate.
No. 92. Acidulated Bone and Potash.
No. 93. Bone and Potash.
No. 94. Garden City Super Phosphate.
No. 95. Twenty-Six Dollar Phosphate.
No. 106. Fine Raw Bone
No. 107. Prairie Phosphate
No. 108. Potato Grower.
No. 425. Tobacco Grower.
No. —. Corn and Wheat Grower.

J. L. Norton, Delaware, O.

No. 306. German Cologne Fertilizer.

L. T. Nye, Seville, O.

No. 270. Pure Ground Bone.

The Oakfield Fertilizer Co., Buffalo, N. Y.

No. 276. Standard.
No. 277. High Farming.
No. 278.. Domestic.
No. 279. Golden Sheaf.
No. 280. Great Value.
No. 281. Potato and Tobacco.
No. 433. Genesee County Wheat Grower
No. —. Raw Bone.

The G. Ober & Sons' Co., Baltimore, Md.

No. 309. Dissolved Bone Phosphate.
No. 350. Farmers' Mixture.
No. 351. Dissolved Bone Phosphate and Potash.
No. 370. Farmers' Standard Ammoniated Phosphate.

The Ohio Farmers' Fertilizer Co., Columbus, O.

No. 50. Superior Phosphate
No. 51. Corn, Oats and Wheat Fish Guano.
No. 55. Acid Phosphate
No. 56. Potato and Truck Fertilizer.
No. 109. Seeding-Down Fertilizer.
No. 110. Fine Ground Bone Meal.
No. 163. Grain and Grass.
No. 318. Wheat Maker.
No. 340. Soluble Bone and Potash.

The Pacific Guano Co., New York, N. Y.

No. 4. Acid Phosphate.
No. 5. Potato Phosphate.
No. 6. Soluble Pacific Guano.
No. 7. Dissolved Bone and Potash.
No. 253. Nobsque Guano.
No. 254. A No. 1 Phosphate
No. 255. Dissolved Bone Phosphate of Lime.
No. 328. Fine Ground Bone.
No. —. Pure Bone Meal.
No. —. Ground Bone and Potash.

The Packers' Union Fertilizer Co., New York, N. Y.

No. 184. Universal Fertilizer.
No. 185. Animal Corn Fertilizer.
No. 219. Wheat, Oats and Clover.
No. 220. American Wheat and Rye Grower.
No. 221. Potato Manure.
No. 388. Acidulated Bone.
No. —. Pure Ground Bone

The Pittsburg Provision Co., Pittsburg, Pa.

No. 236. Pure Raw Bone Meal.
No. 237. Corn and Potato Fertilizer.
No. 371. Crescent Butchers' Ground Bone.
No. 372. Keystone Fertilizer.
No. 373. Guano Fertilizer.
No. 374. Acid Phosphate.
No. —. Pure Bone and Potash (Tobacco Special).

The Planters' Fertilizer Co., Carrollton, O.

No. 384. Wheat and Grass Special.
No. 385. Complete Fertilizer.

The Potomac Fertilizer Co., L. E. Elwood, Agent, Cleveland, O.

No. 1. Bone Phosphate.
No. 308. Complete Manure.

The Powell Fertilizer and Chemical Co., Baltimore Md.

No. 282. Dissolved Bone Phosphate.
No. —. Bone and Potash Fertilizer.
No. —. Red Bag Fertilizer.

The Quinnipiac Co., New York, N. Y.

No. 165. Soluble Dissolved Bone
No. 166. Dissolved Bone and Potash.
No. 317. Climax Phosphate.
No. 399. Ammoniated Dissolved Bone.
No. 410. Bone Meal.
No. 411. Mohawk Fertilizer.
No. —. Uncas Bone Meal.
No. —. Special Potato.
No. —. Plain Super Phosphate.

The Rasin Fertilizer Co., Baltimore, Md.

No. 152. Acid Phosphate.
No. 153. Ammoniated Superphosphate.
No. 172. Soluble Sea Island Guano.
No. 310. Bone and Potash.
No. —. Dissolved Bone.

N. Rassel & Co., Toledo, O.

No. —. Maumee Valley Fertilizer.
No. —. Pure Ground Bone.

The E. Rauh & Sons Fertilizer Co., Indianapolis, Ind.

No. 124. Pure Raw Bone Meal.
No. 125. Pure Ground Bone.
No. 126. Special Corn, Potato and Tobacco Fertilizer.
No. 127. Dissolved Bone and Potash.
No. 128. Soluble Bone.
No. 376. Pig Foot Bone.
No. 389. Peerless Bone.
No. 436. Fine Raw Bone Meal.
No. —. Half Pure Raw Bone and Half Pure Bone Phosphate.

The Read Fertilizer Co., New York, N. Y.

No. —. Leader Guano.
No. —. Read's Standard.
No. —. Farmers' Friend.
No. —. Dissolved Bone
No. —. Ground Bone.
No. —. Bone and Potash or Alkaline Bone.

John S. Reese & Co., Baltimore. Md.

No. 137. Crown Phosphate and Potash.
No. 138. Elm Phosphate.
No. 361. Challenge Crop Grower
No. —. Half and Half.

G. W. Rickard, Medina, O.

No. 271. Animal Bone Phosphate.
No. 272. Dissolved Bone Phosphate.

The Royal Fertilizer Co., Cleveland, O.

No. 209. Lawrence's Wheat Special.
No. 210. P. A. P. for Potatoes and Truck.
No. 211. Old Honesty Phosphate.
No. 212. Royal Bone Meal.
No. 215. Alliance Phosphate.

John Ruehle, Defiance, O.

No. —. Defiance Fertilizer.

Geo. Rupp & Co., Hamilton, O.

No. 341. Bone and Blood Fertilizer.

The J. & F. Schroth Packing Co., Cincinnati, O.

No. 324. Schroth's Special.
No. 344. Corn and Wheat Grower.

The Scientific Fertilizer Co., Pittsburg, Pa.

No. 275. Corn and Grain Fertilizer.
No. —. Pure Raw Bone.
No. —. Bone and Meat.
No. —. Economy Fertilizer.
No. —. Potato Fertilizer.

Sharpless & Carpenter, Philadelphia, Pa.

No. 408. Number 1 Bone Phosphate.
No. —. Number 2 Grain and Grass.
No. —. Soluble Bone and Potash.
No. —. Acid Phosphate.

Southeastern Fertilizer Co., Cleveland, O.

No. 201. Farmers' General Crop Phosphate.
No. 256. Farmers' Bone Phosphate.
No. 257. Farmers' General Crop Phosphate with Potash.

The Springfield Fertilizer Co., Springfield, O.

No. 232. Atlas
No. 358. Globe.
No. 360. Favorite.
No. 406. Soluble Bone.
No. 407. No. 1
No. 409. No. 4.
No. 428. I. X. L. Ground Bone.
No. —. Tobacco and Vegetable

J. L. & H. Stadler, Cleveland, O.

No. 222. Pure Raw Bone Meal.
No. 223. Valley Phosphate.
No. 224. Live and Let Live Phosphate
No. 420. Bone and Meat Phosphate.
No. —. Potato Manure.

The Standard Fertilizer Co., Boston, Mass.

No. 52. Bone and Potash.
No. 53. Dissolved Bone Phosphate.
No. 54. Extra Fine Ground Bone.
No. 154. Ammoniated Dissolved Bone.
No. 155. Guano.
No. 156. A Brand.
No. 157. Potato Special.

C. A. Standen, Elyria, O.

No. 273. Pure Bone Meal.

B. T. Stanley, Berlin Center, O.

No. 418. Bone Black Crop Multiplier.

The Star Fertilizer Co., Cleveland, O.

No. —. Star Pure Bone.

Richard Stephens & Co., Ashtabula, O.

No. 202. Buncombe Fertilizer.

Strecker Bros., Marietta, O.

No. 78. Ground Bone.
No. 79. Climax Phosphate.
No. 80. Acme.
No. 81. Dissolved Bone.

The Susquehanna Fertilizer Co., Baltimore, Md.

No. 338. Soluble Bone Phosphate.
No. —. XXV Phosphate.

Swift and Company, Chicago, Ill.

No. 69. Superphosphate.
No. 168. Pure Raw Bone Meal.
No. 169. Ground Steamed Bone.
No. 249. Bone Tankage and Potash 3 per cent.
No. 250. Bone and Potash 3 per cent.
No. 342. Bone Tankage.
No. 380. Potato and Tobacco Grower.
No. 426. Bone Tankage and Potash 6 per cent.
No. 427. Pure Acid Phosphate.

The Tennessee Chemical Co., Nashville, Tenn.

No. 295. Ox High Grade Dissolved Bone.
No. 296. Ox Bone and Potash.
No. 391. Ox Bone with Ammonia and Potash.

The I. P. Thomas & Son Co., Philadelphia, Pa.

No. 74. Wheat Special.
No. 75. S. C. Phosphate.
No. 76. Improved Super Phosphate.
No. 77. Normal Bone Phosphate

The I. P. Thomas & Son Co., Philadelphia, Pa.—Concluded.

No. 161. Raw and Dissolved Bone.
No. 162. Pure Ground Animal Bone.
No. —. Potato Manure.
No. —. Farmers' Choice.
No. —. Special Corn Fertilizer.

The Tygert-Allen Fertilizer Co., Philadelphia, Pa.

No. 416. Star Bone Phosphate....
No. 417. Ammoniated Bone Phosphate.
No. 419. Dissolved Bone Phosphate.
No. 434. Standard Bone Phosphate.
No. —. Prairie Bone Meal.
No. —. Special Potato.....
No. —. Soluble Bone and Potash.

The Virginia-Carolina Chemical Co., Richmond, Va.

No. 26. Double Bone Phosphate (Extra strong).
No. 395. Standard Bone and Potash.
No. —. Beef, Blood and Bone.

George Wagner, Sandusky, O.

No. 269. Hercules Bone and Meat Phosphate.

The Walker Fertilizer Co., Clifton Springs, N. Y.

No. —. Excelsior Brand, a Food for House Plants.

Walker, Stratman, & Co., Pittsburg, Pa.

No. 403. Four Fold.
No. 404. Smoky City.
No. 437. Helpmate.
No. —. Pure Raw Bone.
No. —. Potato Special.
No. —. Big Bonanza.
No. —. Bone and Meat.
No. —. Tobacco Special.

The Walton Fertilizer Co., Warren, O.

No. 130. Diamond Cereala Bone Black and Potash.
No. 131. Diamond Cereala Soluble Bone.
No. 132. Ontario Fish Guano and Potash.
No. 133. German Truck and Potato Manure.
No. 179. Reliable Dissolved Bone.
No. 180. Special Dissolved Bone Phosphate.
No. 268. Wheat and Grass Grower.
No. —. Pure Bone and Potash.

The Western Union Chemical Co., Cleveland, O.

No. 30. Half and Half.
No. 31. International Phosphate.
No. 32. Bull Dog Phosphate.
No. 33. Dissolved Bone and Potash.
No. 196 Ohio Farmers' Bone Super Phosphate

The Western Union Chemical Co., Cleveland, O.—Concluded.

No. 197. Entire Bone Phosphate.
No. 198. Union Potato and Tobacco Fertilizer..
No. 274. Tiger Bone Meal.
No. 381. Improved Bone.

M. E. Wheeler & Co., Rutland Vt.

No. 146. Potato Manure.
No. 191. Corn Fertilizer.
No. 192. Royal Wheat Grower.
No. 193. Grass and Oats.
No. 194. Electrical Dissolved Bone.
No. 316. High Grade Wheat and Clover.
No. 377. Pure Ground Bone.
No. —. Havana Tobacco Grower

The Wheeling Butcher's Association, Wheeling, W. Va.

No. 171. Ohio Valley Bone Dust.

The Williams & Clark Fertilizer Co., New York, N. Y.

No. 177. Prolific Crop Producer.
No. 178. Americus Dissolved Bone and Potash.
No. 206. Royal Bone Phosphate.
No. 244. Good Grower Potato Phosphate
No. 267. Acorn Brand, Acid Phosphate.
No. 366. Dissolved Bone Phosphate.
No. 421. Cartaret Ground Bone.
No. —. Universal Ammoniated Dissolved Bone.
No. —. Americus Pure Bone Meal.

The Youngstown Fertilizing Co., Youngstown, O.

No. 283. Night Soil Guano.

The Zell Guano Co., Baltimore, Md.

No. 70. Little Giant.
No. 71. Dissolved Bone Phosphate.
No. 114. Dissolved S. C. Phosphate.
No. 181. Dissolved Bone Phosphate and Potash.
No. 430. Economizer .
No. —. Pure Ground Raw Bone.
No. —. Special Compound for Potatoes, etc.
No. —. Ammoniated Bone Superphosphate.
No. —. Calvert Guano.

FERTILIZER LAW.

To Regulate the Manufacture and Sale of Commercial Fertilizers.

SEC. 4446*a*. [How package containing commercial fertilizer to be marked.] Any person or company who shall offer, sell or expose for sale in this State, any commercial fertilizer, shall affix to every package, in a conspicuous place on the outside thereof, a plainly printed certificate stating the number of net pounds in the package sold or offered for sale, the name or trade mark under which the article is sold, the name of the manufacturer and place of manufacture, and a chemical analysis stating the percentage of nitrogen, or its equivalent in ammonia, in an available form, of potash soluble in water, and of phosphoric acid, in an available form (soluble or reverted) as well as the total phosphoric acid.

SEC. 4446*b*. [Person offering same for sale to deposit sample with Secretary State Board of Agriculture.] Before any commercial fertilizer is sold or offered for sale, the manufacturer, importer, or party who causes it to be sold or offered for sale within the State of Ohio, shall file with the Secretary of the Ohio State Board of Agriculture, a certified copy of the certificate referred to in Section One [4446*a*] of this act, and shall deposit with said Secretary, a sealed glass jar, containing not less than one pound of the fertilizer, accompanied with an affidavit that it is a fair average sample.

SEC. 4446*c*. [Manufacturer, importer, or agent to pay license.] The manufacturer, importer, or agent of any commercial fertilizer, shall pay, annually, on or before the first day of May, a license fee of twenty dollars *on each brand*, for the privilege of selling or offering for sale within the State, said fee to be paid to the Secretary of the Ohio State Board of Agriculture; provided, that whenever the manufacturer or importer shall have paid the license fee herein required, for any person acting as agent for such manufacturer or importer, such agent shall not be required to pay the fee named in this section.

SEC. 4446*d*. [Analysis to be made by Secretary State Board of Agriculture.] All analyses of commercial fertilizers sold within the State shall be made by or under the direction of the Secretary of the Ohio State Board of Agriculture, and paid for out of the funds arising from license fees, as provided for in Section Three [4446*c*]. At least one analysis of each fertilizer sold shall be annually made.

SEC. 4446*e*. [Secretary to publish, annually, report of analyses made and fees received.] Said Secretary shall publish annually, a correct report of all analyses made and certificates filed, together with a statement of moneys received on account of license fees and expended for analyses, and any surplus arising from license permits shall be placed to the credit of the agricultural fund.

SEC. 4446*f*. [Persons selling without complying with foregoing provisions, how punished.] Any person or party who shall offer or expose for sale, or sell, any commercial fertilizer without complying with the provisions of Sections 4446*a*, 4446*b* and 4446*c* of the Revised Statutes, or shall permit an analysis to be attached to any package of such fertilizer, stating that it contains a larger percentage of any one or more of the constituents named in said Section 4446*a* than it really does contain, shall be subject to a penalty of not less than two hundred dollars for the first offense, and not less than five hundred dollars for every subsequent offense, to be recovered in a civil action, and the offender, in all cases, shall also be liable for damages sustained by the purchasers of such fertilizers; provided, however, that a deficiency of one per cent. of the nitrogen, potash or phosphoric acid claimed to be contained, shall not be considered as evidence of fraudulent intent.

SEC. 4446*g*. [Where suits to recover penalties may be brought.] Suit may be brought for the recovery of penalties under the provisions of this act in the court of common pleas of the county where the fertilizer was offered for sale, or sold, or where it was manufactured; and all penalties so recovered, shall be paid into the State treasury to the credit of the general revenue fund.

SEC. 4446*h*. [Secretary of State Board of Agriculture may select samples to be analyzed.] The Secretary of the Ohio State Board of Agriculture, or any person by him deputized, is hereby empowered to select from any package of commercial fertilizer exposed for sale in any county in Ohio, a quantity not exceeding two pounds, which quantity shall be for analysis to compare with sample deposited with said Secretary, as provided in Section Two [4446*b*] of this act, and with the printed certificate found on the given package found on sale.

SEC. 4446*i*. [All suits under this act to be brought by Secretary State Board of Agriculture.] All suits for the recovery of fines under the provisions of this act, shall be brought by the Secretary of the Ohio State Board of Agriculture, in the name of the State of Ohio.

SEC. 7002. [Fine and imprisonment for violation of provisions of fertilizer law.] Whoever sells, exposes for sale, or offers for sale any commercial fertilizer without having complied with the provisions of Sections 4446*a*, 4446*b* and 4446*c* of the Revised Statutes shall be fined in any sum not exceeding two hundred dollars. or imprisoned not more than thirty days, or both, and said fine or imprisonment, or both, shall not be a bar to the recovery of the civil penalty provided for by Sections 4446*f* and 4446*g* of the Revised Statutes.

PROCEEDINGS

OF THE

FIFTY-FOURTH ANNUAL MEETING

OF THE

Ohio State Board of Agriculture,

Held in the Senate Chamber, State House, Columbus, Ohio, Thursday, January 12th, 1899.

The Meeting was called to order at 10 o'clock, A. M., by Hon. C. Bordwell, President of the Board, who announced that the session would be opened with prayer by the Rev. C. L. Winget, of Columbus, Ohio.

Rev. C. L. Winget then invoked the Divine blessing in the following words:

Oh Thou, our God, who art over all, God blest forever, our Father, our Friend and Helper, we come into Thy presence this morning with praise upon our lips, with gratitude in our hearts. Thy loving kindness is wonderful. Thy grace is matchless. The year that hath just closed hath witnessed great mercy, great providence. Thou hast been mindful of Thy creature, man. Thou art continually planning for his happiness, for his peace, for his well being. We thank Thee, our Father, as we look down the way we have come for the year past, and recognize the fact that goodness and mercy have been our constant companions. At no time have we been left alone. At no time hast Thou veiled Thy face. Thou hast enriched our graneries. Thou hast bountifully supplied all our physical wants. Thou hast been more gracious, our Father, than we have been faithful. Thou hast given great abundance from the soil. Thou hast given the sunshine. Thou hast given the shower, but we have not sown abundantly. And yet Thou hast given us a great increase. We thank Thee for the many blessings bestowed upon us in the year just past. We thank Thee because Thou hast crowned the enterprize of the year with great success and we pray Thee, our Father, as we come together today as Thy servants and Thy workers that Thou make our hearts go out to Thee in gratitude and make Thy servants who meet on this day go away from here with increased zeal, with renewed vigor and with a better comprehension and understanding of the things we should know, so that the year to come shall be improved, wherein the year past has been neglected.

God help the husbandmen of this country to feel that they are the main stay of the country. Help them to know that they are the beginning of all prosperity. Help them to realize, we pray Thee, that they hold the most important place, standing nearest to Thee in preparing for the things of men.

Our Father, I pray Thee to help us while we are laboring for those physical conditions that are to aid us, to make us strong that we may not forget the higher conditions of life, the more important things which move our hearts for a closer fellowship and a better understanding of God and His ways.

We pray Thee, our Father, to bless our land and our country. We thank Thee, Holy Father, that amid the uncertainties, anxieties and toils of the past year Thou hast been ever watchful of our interests and hast directed matters as we trust for Thy glory and for the good of man. We pray that Thou be with the Chief Executive of this great nation. Give him wisdom in the performance of his duties and give him courage to follow out the mandates of Thy will, and we pray Thee, our Father, that he may go forth, having set up his banner in Thy name, fearlessly, zealously and earnestly, doing that which shall be the greatest good for the greatest number. We pray Thy blessing upon this Commonwealth, and the Chief Executive of this great State, and that Thou may so lead him in the affairs of his office that he may discharge his duties to the end that the great Ohio State shall stand at the front always, as it stands at the front now in the enterprises of the day.

Our Father, bless this session of Thy servants who are here. Help each one in his place to remember that it is for more than a day they are deliberating, that it is for time, and may all that they do be for the weal of the interests that they have at heart.

And now, dear Lord, we will leave ourselves with all our wants in Thy hands. We ask for Thy protecting help. We ask for wisdom and strength, that our lives shall be of such character that at the end of the day we may receive the blessing "well done" from our Father who art in Heaven, and to Thy great name which is worthy we will render all praise and glory and honor through Jesus Christ, our Lord. Amen.

President Bordwell: Before proceeding with the call of counties and recording the names of delegates, I will appoint a committee to wait upon Governor Bushnell and escort him to this hall, and while the committee is performing that duty we will proceed with the regular business of the Meeting. I will name as members of the committee to wait upon the Governor, Mr. S. A. Baldwin, of Muskingum County, Mr. D. L. Sampson, of Hamilton County, and Mr. W. F. Roudebush of Clermont County.

I will next appoint the Committee on Credentials as follows: Mr. C. H. Ganson, Champaign County, Mr. W. F. Tulleys, Ross County, and Mr. George W. Carey, Warren County.

At the conclusion of the appointment of committees, Hon. Asa S. Bushnell, Governor of Ohio, was escorted to the President's Chair and introduced by President Bordwell, as follows:

Gentlemen, I now have the pleasure of introducing to you our Governor, Hon. Asa S. Bushnell, who will welcome you to our midst (applause).

Hon. Asa S. Bushnell then said:

Mr. Chairman and Gentlemen of the Ohio State Board of Agriculture:

I have been asked to come up here for a moment and give you greeting and bid you welcome, and I do it with the most profound pleasure. I am glad to welcome you here as citizens of the greatest Commonwealth in the nation (applause), and I am glad to welcome you as representatives of the greatest industry in the nation—agriculture (renewed applause).

The year just past has been a most eventful one, as much so perhaps as any, I might say, in the last third of a century. The earth has given her increase in great abundance and our armies on land and sea have been victorious (continued applause). None have been more ready to give support to the nation on the fields of battle than the agriculturists of the country (cheering). Those who responded most promptly were the young men from the rural districts and the representatives of agriculture, and it seems to me as though this were a year—the one just past—of which it might be said, as was said by a neighbor on the death of the wife of one of his acquaintances. When met by a friend and asked what had occurred in the neighborhood, he said, "Why, John Smith's wife died a few days ago." The next inquiry was, "Of what complaint?" He said, "Why, no complaint; everybody was satisfied." (Laughter.) It seems to me that the year just past is one in which we can also say, "Everybody is satisfied." Certainly, everybody should be satisfied. The fields have given us most abundant crops and we have had splendid results from all our endeavors until now we have, you might say, a new crop in the shape of some islands that we hardly know what to do with. So everything has yielded its increase and I congratulate you, and the people of our state and of the country on the good promise for the coming year, the last year in the century. As we look forward to this, now the last year of the nineteenth century, let us resolve to make it the grandest year of the century. If we have done anything that has given pain to others, let us resolve that we will this year endeavor to do that which will give them pleasure. Let us have peace and harmony and with every effort we can make, endeavor to bring about even greater prosperity, greater abundance of good feeling and good fellowship and greater productions from the farm and the factory and all the other industries we are blest with in this country.

I am not going to detain you from your deliberations. I welcome you here to the Capital City. I hope the deliberations of your meeting, will be pleasant and of great profit to the grand industry which you represent. It is always a pleasure to me to meet with the farmers and those that represent agriculture.

Some of the happiest years of my life—younger years—were spent upon the farm. I left the farm thinking I might be more useful in other callings. I said this on an occasion somewhat simliar to this a year or two ago and a friend who followed me in my remarks said that he left the farm "because the farmer wanted me to." But I left thinking I might be useful in other walks of life. I don't know whether I might have made a success in farming or not, but I can say it is a splendid calling. It is the most important industry in our country and those of you who represent it certainly can point with pride to your calling and to your employment. I thank you very much for the privilege of being with you and thus addressing you. It has been a pleasure for me to come here and see you for a moment and look you in the face. I wish for you all good health and abundant prosperity, and hope that we shall go on in our country to greater victories than those of the past year. There is one thing that we may be certain of, that the farmer, the agriculturist will see to it that good care is taken of the country we have and we can always depend upon him for loyalty in support of the government in regard to our future possessions and any expansion there may be in the territory of the United States. Gentlemen, I thank you and bid you good morning. (Applause.)

Hon. C. Bordwell, President of the State Board of Agriculture, then delivered the following, his annual address:

Gentlemen of the State Board of Agriculture:

I but voice your congratulations, that this fifty-fourth annual gathering of delegates, finds us as agriculturists and as a people, in more prosperous condition than we have been for a few years past, and I sincerely trust that the encouragement we find at the close of the work of the year 1898, is but an omen of increased prosperity and a condition of success for agriculture and all the industries during the year just ushered in and for future years as well. The year past, with its seed times and harvests, has brought to the farmers of Ohio abundantly of nearly all the crops produced, and, while prices have not been high, there has been demand for everything produced and the farmer has been able to exchange his crops and stock for cash and with a profit sufficient for some surplus to apply on the debts he was forced to contract in less prosperous times of the past.

The Ohio farmer occupies a position of prominence so far as improved methods and intelligent culture are concerned, and he is giving attention to the best live stock for bettering his herds and feeding for the markets. To Ohio the people of the nation look with expectancy for the best of everything, and the pride of the state and the energy of her citizenship prompts us to respond in agriculture, in manufactures, in trade, in domestic affairs, in education, in government, and in men capable and ready to assume honorable leadership in important and trying events, in whatever position and wherever occurring, affecting us as a people and as a nation. The year past has been an eventful one, in many respects, and more serious to some of us whose sons were called upon to defend the honor of our flag and our good name. Ohio as usual distinguished herself, and peace reigns, and she will now do her share toward feeding and clothing those occupying our newly acquired possessions or trusts and supplying them with the implements of agriculture and other manufactures in keeping with enlightenment and the Ohio idea.

To aid us in progress we have the best schools and colleges and our sons and daughters are among the brightest in search of knowledge. We have farmers' organizations guarding the interests and seeking the advancement of the great brotherhood of farmers, while throughout the state, at our very doors, are conducted farmers' institutes that figure largely in elevating the profession and educating along the proper lines for developing the greatest possible success in all our work.

We are here today, fresh from our farm work and ripe in the experiences of the year, and it will be strange indeed, if, after an interchange of these experiences and the discussion of vital subjects affecting us as farmers, we do not return to our farms and our constituents, better prepared for the work of the present year and better able to cope with the problems that confront us.

I know you will think it kind in me to spare you the infliction of a long address, so I will proceed briefly with a report of some of the most important work of the State Board of Agriculture during the year.

The operation of the State Fair and Industrial Exposition, is one of the important divisions of the Board's work, and toward it is directed that earnest attention required to make a leader and a school of object lessons, wherein the lessons taught profit us as farmers and manufacturers, and benefit the state at large, by creating both supply and demand, and increasing wealth in all the avenues of industrial pursuits.

Ohio, with her diversified farming and manufacturing interests, demands, and is worthy of, the best fair grounds and the most commodious buildings and conveniences for exhibiting our products, and these, thanks to wise legislation and patriotic legislators, we are coming into possession of. The last General

Assembly of Ohio, by wise enactments and liberal appropriations, gave to agriculture an extension of fair grounds and some much needed improvements and new buildings for cattle, sheep and swine, that will excel any in the world and be an attraction for showing these classes of live stock, superior to anything heretofore known. The money provided by legislation for these purposes has been expended to the best possible advantage, and I feel sure that another legislature will make appropriations to continue the work so as to provide also for the better exhibition and classification of horses, when all the classes of live stock will then be provided for in improved buildings, which, with the buildings for agricultural products, manufactures, domestic articles, art and education, already on the grounds and in excellent condition, will constitute industrial exposition facilities equal to Ohio's demands and superior in comparison with many like grounds.

The money provided by the last General Assembly has been expended for real estate, new structures and improvements, as follows:

Land, etc		$25,052 25
New structures		37,964 00
Repairs of buildings, fencing, etc	$3,255 88	
Repairs of roofs	1,771 35	
Painting old buildings	4,507 19	
		9,534 42
Lake and grading		5,418 00
Water works—main and hydrants		973 69
Drainage of buildings		700 42
Material and equipment		1,129 50
Total		$80,772 28

The addition of land now gives the state one hundred and fifteen acres in fair grounds and with the improvements thereon represents a total value of nearly four hundred thousand dollars, the greater portion of which has been accumulated for the state by the energy of its Board of Agriculture in the conducting of the interests entrusted to them.

The fair of the past year is recorded as one of the most complete and best arranged expositions of agriculture and the mechanic arts that was ever held in the state. Every department was overflowing with the best that is produced, and the lessons taught to those who witnessed the displays were many and profitable. The prime object of the annual exhibitions is to educate. It is erroneous to suppose that it is for the purpose of making money. If conducted properly in and along the lines of education, money is made, not to the fair, but to the people who interest themselves in participating as exhibitors or visitors, and such result it should be the purpose of every fair board to produce and maintain.

The State Fair of 1898 was notable for its splendid exhibit of horses, cattle, sheep, and swine, nearly every recognized pure breed being represented in the several show rings, and among them animals of distinguished sires and national fame.

It is said of a country that the character of its domestic animals is an index of the intelligence and thrift of its people, and that this is true no one can doubt. The character of live stock shows greatest perfection in countries where prominence is given to public exhibitions of the same, and where a study of the types can be intelligently pursued as they can be at the annual exhibition on our state grounds. To the influence of these exhibitions, more than to anything else, is due the distinction occupied by Ohio with respect to her improved breeds of live stock, and encouragement should be continued until the pure breeds, and animals bred to a fixed purpose, shall predominate in every county of the state. Let us hoist high the standard of excellence in our fair, not only for live stock, but throughout every department, that there may accrue only good to the people and the industries of the state. For the finances of the fair, I refer you to the Treasurer's report, which will be submitted to the Meeting.

The Farmers' Institutes, held under the management of the Board, are factors in agricultural education that are highly appreciated in every county of the state, as is evidenced by the yearly increase of petitions for their holding. During the season now in progress, and which continues until March 4, there will be held two hundred and fifty institutes, distributed throughout every county of the state. It is gratifying to know that not a single county of the state is omitted in the list of institutes. Engaged in the work, as lecturers employed and sent out by the Board, are thirty-eight gentlemen, selected because of their knowledge of agriculture, and the ability they possess of imparting that knowledge. They are practical farmers, horticulturists and stock breeders, whose instructions are the result of experience in their particular lines, and not theorists whose doctrines cannot always be substantiated in practice.

The forming of institute circuits and the assignment of speakers and dates is one of the most difficult tasks to perform and occasions much serious thought in considering the requirements of each locality, and avoiding unnecessary travel to speakers and in preserving the strictest economy, that the greatest number of institutes possible within the means of the Board, may be held. For particulars of the institutes held the last season, I would refer you to the institute report prepared by the Secretary and published by the Department of Agriculture.

The work of crop and stock reporting has been continued as usual, in which work we have had the valuable assistance of a competent corps of correspondents, numbering some fifteen hundred persons and representing every township of the state.

The figures as received monthly from the correspondents are compiled in the Department and published for general distribution. This entails a vast amount of work, but is important and valuable to farmers, as from no other source can they secure official monthly information as given in these reports.

Under the statutes of the state, the Secretary of the Board is required to inspect and analyze the brands of commercial fertilizers that are sold, or offered for sale, in the state. This is a statutory provision in the interest of farmers and honest manufactures, as it places the business upon a basis of fairness and protection to both. The farmer, by means of the analyses, is given knowledge of the chemical properties of the several brands and thus selects that which he deems best for his particular use, while the manufacturer is enabled to prove to his customers that the claims made for his goods are substantiated by the official tests made by the state. The composition of fertilizers, unlike other goods, can only be determined by chemical tests; hence, these precautionary measures will at once detect irregularities from whatever source. Some idea of the extent of the fertilizer business and the immense labor and correspondence entailed upon our Secretary, as Inspector, may be formed when we consider that last year, there was disposed of in Ohio, upwards of two hundred thousand tons. The business is yearly increasing and proportionately the work of inspection and analyses.

I have referred to the work specially provided by law, in addition to which there is a great deal of detail and correspondence, that makes the Department of Agriculture one of the most important and busy in the State Government. In all the labors of the Board the members have heartily coöperated and I wish to express thanks for the earnest support accorded me at all times and by each member.

In all the important and trying work of the Board, I cannot commend too highly, the untiring, unceasing labors of our Secretary, Capt. W. W. Miller.

He has proven himself peculiarly adapted to the work he has been called upon to perform and which he has most successfully and satisfactorily carried forward. He enjoys the confidence of the people and of his fellow workers in the field of agriculture, and it affords me pleasure to accord him this public recognition and commend his work.

I desire also to approve and commend the work of our Assistant Secretary, J. W. Fleming. His earnest, painstaking efforts are appreciated by us all. His labors in fair work especially, have been recognized in many directions.

Thanking you for your attention and wishing you a prosperous year, we will proceed to the further business of the Meeting.

At the conclusion of the President's Annual Address the report of the Committee on Credentials was submitted with the request that the Secretary read the same.

Secretary Miller: Perhaps it would be well to economize time by reading the report of the Committee on Credentials and calling the roll at one and the same time, as it would save an extra calling of the roll. As the counties are called I would like to have each delegate respond in person, and if his report has not been filed with me already and his name given to the Assistant Secretary, kindly come forward, hand in the report and give Mr. Fleming his name.

Secretary Miller then called the roll by counties, the delegates responding and delivering the reports of their societies.

Mr. C. W. Halfhill, of Mercer County: Mr. President — Do I understand roll call of counties is to obtain the counties that are entitled to representation in this Meeting?

The President: Yes, sir.

Mr. Halfhill: I would like to inquire whether Defiance County is holding a regular county fair, and also Scioto County? Last night it was stated that Defiance County was a stock company affair and hence not entitled to representation in this Meeting.

The President: I will refer the matter to the Secretary.

Secretary Miller: If it is a fact that it is a stock company, then it is not entitled to representation, but we have no knowledge on that subject, and the Committee on Credentials did not have that knowledge before it. I would suggest that it would be proper to amend the report of the Committee if the fact is as Mr. Halfhill states. I would make the suggestion that the report of the Committee on Credentials be amended so as to omit Defiance County from the list, if the facts are as stated.

Mr. Halfhill: I would also like to inquire whether a county that has not held a county fair for a year or two is entitled to a vote in this Meeting? Shelby County has not held any fair for a year or two. Highland County, I also understand, has a fair which is conducted by a stock company, and they are doing business for profit among themselves. I have that information from their own Secretary. The Defiance County Fair went down and the grounds were sold. They have a fair in Defiance County, but it is a stock company affair, and managed for profit by its members.

Secretary Miller: In answer to that specific question and other questions of a similar nature, I would say that agricultural societies professing to be organized under the law and filing reports with the State Department under oath are so recognized until such information shall be placed at the disposal of the Department as will lead the Department to understand that they are not entitled to such privileges. That has not been done in the case of Defiance County, and so far as our records show it is clear upon the record. We have had rumors that several different fairs were not organized according to law, and we have instituted inquiries, and those inquiries have been answered by the statement that they were operating under the State law and under the rules and regulations of the State Board of Agriculture. Defiance County is not represented, I see. It did not respond. I would renew my suggestion that where there are county societies known to be organized contrary to law, those delagates present knowing the facts should report them and move to amend the report of the Committee on Credentials by striking them from the list. I would like to hear from the Chairman of the Committee on that subject.

Mr. C. H. Ganson, of Champaign County: As Chairman of the Committee, in answer to the inquiry, I will say that the only information we have was the information furnished us by the Secretary. If Mr. Halfhill knows of three or four counties not entitled to representation it is his business to bring that information before the Committee on Credentials; otherwise we could not say those counties are not entitled to representation. As to Shelby County, I do not know what report should be made as to that county. It did not hold any fair last year.

Secretary Miller: It is entitled to representation but not to an order for per capita allowance. It has kept up its organization.

Mr. Ganson: So far as these other counties are concerned it was not our province when everything appeared straight before us to say they were not entitled to representation when there was no information before us, but it is the duty of every honest man here to see that things are conducted in a proper manner, and if Mr. Halfhill has any evidence to substantiate his statements, now is the time to bring it up, and we will be glad to correct the report if we have made an error.

Secretary Miller: I did not answer quite fully Mr. Halfhill's question, in this, that a society failing to hold a fair in a given year is not thereby deprived of the privilege of representation in this Meeting. It is eligible to membership if for some good cause it has been unable to hold an annual fair. I have an affidavit that was handed in from a county agricultural society this morning — not, however, from the county under consideration — whose buildings were washed out by a freshet and it made every possible effort to hold a fair last fall, but was unable to do so. That society owns its real estate, owns its improvements and is a de facto society, as much as any other society in the State of Ohio, but it did not hold a fair last year. Certainly that society is entitled to representation. It has made preparations for holding a fair in 1899 and has made affidavit to that effect. It has repaired and rebuilt its buildings and put the grounds in good condition. I speak of this simply because it is an individual case illustrating what I have said. Of course, however, it is a matter for the meeting to decide.

Mr. Halfhill: I would like to ask what Fair in Defiance County has been held which would entitle that county to representation here. Whether it was the Fair at Defiance or the Fair at Hicksville?

Secretary Miller: Defiance, as I understood.

Mr. Halfhill: Defiance county has not held a Fair, I think, for ten years, and the grounds have been sold, as I understand it. There is a Fair over in the western part of the County, but it is managed by a stock company. It is close to the Indiana line. I think any gentleman from that part of the State will bear me out in my statements. I know that to be a fact. I heard a gentleman last night say that in Scioto County they were organized as a stock company. He told us in a meeting last night. I asked him afterwards if they got a vote in this Meeting and he said no. That is the reason I make the inquiry.

Secretary Miller: Mr. President, Hicksville is not represented. Defiance is not represented, but we have no information in our Department that the Society has gone out of existence. We have no official information and this is the first oral or other information received on the subject.

Mr. Halfhill: How long since the Society has filed a report?

Secretary Miller: I do not know. I do not have the records here, but I think it has not filed a report very recently.

Mr. Halfhill: If it has not filed a report for four or five years I think that would be evidence in itself that it was not in existence.

Col. J. H. Brigham: It seems to me that the proper course to pursue, if the right to representation on the part of any county is questioned, would be to challenge that right and let the matter go to the Committee on Credentials and have a hearing and let them report and thus save the time of the Meeting. Perhaps you would arrive at a correct solution of the question more readily than if the matter were submitted to the entire State Board of Agriculture, now in annual session.

Mr. Ganson: Mr. President, it does seem to me that so far as our proceedings today are concerned it makes very little difference what is done with this matter, and it might be corrected at another time. For instance, I understand that three or four counties have been spoken of here, yet none of those counties are represented. As a matter of course, it makes no difference then so far as this meeting is concerned. They are not represented anyway and of course they will not vote. It is well enough perhaps to bring it up so that in the future those counties not entitled to representation may be stricken from the list, but at this particular time, as they are not represented either by personal delegates or by proxies, what harm can it do?

Mr. Halfhill: Mr. President, it makes just this difference. If there are seventy-five Fairs represented here which are entitled to cast votes in this Meeting and when the vote is cast there are seventy-five votes, then it would make no difference so far as the proceedings of this Meeting are concerned; but if there are only seventy-two Fairs entitled to representation and seventy-five votes cast, then there is something which needs looking after. That is why I mention it at this time, and I think it is perfectly right. If Defiance County has not been filing a report for five or six years and yet a vote were cast for Defiance County, it would make one too many on the list.

A member: If it is not represented and not claiming representation, how is Defiance County going to cast a vote, and who is going to cast it?

The President: A motion would be in order to strike Defiance County from the list on the ground that it is not entitled to representation.

Mr. Halfhill: Mr. Chairman, in order to get this matter before the Meeting I move you, sir, that this report be returned to the Committee on Credentials with instructions to report immediately after dinner and let them investigate these matters. If there are members present who know of similar cases, let them put the facts into the hands of the Committee on Credentials so that they may be able to report accordingly.

The motion was then seconded and carried, and the Report of the Committee on Credentials was returned to the Committee.

Mr. Ganson: Gentlemen, the Committee on Credentials wants to do its duty and be discharged honorably. If any of you have any complaint as to any of these counties, or know of any fact which would raise a question as to their right to representation in this body, I hope you will appear before the Committee on Credentials and give them the benefit of your knowledge, and any evidence which is presented to us will be honestly considered.

Mr. W. I. Tenny of Miami County: Mr. President, another matter might be brought up before this Meeting at this time in which we are all more or less interested. There are many persons here, citizens of the State, who are interested in the work of this Meeting, whose experience and knowledge would be of benefit to us in our deliberations. I desire, therefore, to offer the following preamble and resolution:

"WHEREAS, Among the purposes of the annual meeting prescribed by law are deliberation and consultation as to the wants, prospects and condition of agriculture throughout the State; therefore, be it

"*Resolved*, That persons not delegates who may be in attendance and interested in agriculture are cordially invited to participate in the discussions on agricultural topics presented for consideration, but not to introduce resolutions, make nominations or vote on any question."

I move the adoption of this resolution.

Mr. A. F. Shaffer, of Fulton County: I second the adoption of the resolution.

Dr. W. I. Chamberlain, of Summit County: I would like simply to call attention to the fact that if persons not delegates are not permitted to make nominations it is an entire change from the precedent of twenty-five years past, and I would suggest, although I am not a delegate, that that part of the resolution should be stricken out. It has been the custom from time immemorial, so far back as I know, that outside persons might make nominations if there was no objection. If you adopt this resolution, no outside person — for example, Col. Brigham, or any other gentleman who is present – could make a nomination for a member of the Board. I only say this in order that we may understand that if we adopt this resolution it is a change of custom in this respect.

Mr. Tenny: That is true, Mr. President. My idea about this is that there are a good many candidates coming from certain localities who are not acquainted with some of these more fluent speakers to the same degree that other candidates may be, and my object in presenting this resolution is that we can all stand upon the same footing. Dr. Chamberlain and other men here who are prominent public speakers could present the name of a certain candidate with a great flow of oratory and probably secure his election, while another man just as worthy and probably better entitled to the position has to take a back seat and fail to be elected in consequence of some rural person like myself undertaking to present his name. I thought for that very reason I would include that feature in the resolution, although, as Dr. Chamberlain says, it is changing what has been the custom of this Board, but it is before you to act upon (applause).

The motion to adopt the above resolution was then voted upon and carried.

President Bordwell: A resolution was passed at the annual meeting last year instructing the State Board of Agriculture to appoint a Committee on Resolutions. The board has appointed the following Committee: Honorable J. L. Carpenter, of Meigs County; F. A. Derthick, of Portage County, and W. F. Hufford, of Hardin County.

Assistant Secretary Fleming: Mr. President, if you will permit me I will say that the Committee on Resolutions can have the use of one of the rooms of the Department of Agriculture for its deliberations, and I would suggest that the Chairman of the Committee on Credentials announce to the Meeting where and when his Committee will meet, so that persons desiring to present information to the Committee will know the time and place of meeting.

Mr. Ganson, Chairman of the Committee, desires me to announce that the Committee on Credentials will meet in the rooms of the Department of Agriculture, on the lower floor, at half-past one o'clock. Anybody having any information to submit to the committee can do so at that time and at that place.

Mr. Halfhill: May I inquire if the Committee upon Resolutions are members of this Annual Meeting, and delegates?

Dr. Chamberlain: Two at least of your Committee on Resolutions whose business it is to introduce the resolutions are not even delegates, and therein comes the beautiful working of this part of the resolution. You have shut out the men whom a year ago you appointed to introduce your resolutions and ordered now that they cannot do it. I have no objection. I have no speech in my inside pocket that I care to deliver in favor of anybody. I was not on the program for it, but I think it is a pretty sudden change to make without any consideration. I think the third one on the Committee on Resolutions is a delegate. Will anybody tell us?

The President: This committee was appointed a year ago by the State Board of Agriculture in annual session at that time and was not appointed since this resolution was adopted.

Mr. Halfhill: How many of the members of the Committee on Resolutions are members of the Meeting and delegates?

The President: Mr. Carpenter and Mr. Hufford are, but Mr. Derthick is not. Two out of the three members of the Committee on Resolutions are delegates to this Meeting.

Mr. Halfhill: I think it would be a good thing to pass this resolution around and endeavor in the future to limit the work of this Meeting to the delegates. I do not believe in appointing the Committee on Resolutions a year ahead of the time they are to report.

The President: The resolution was passed at the Meeting a year ago, and the purpose of it was that resolutions could be printed and put on the desks of the members so that they could study them more thoroughly before voting upon them. That was the object, as I understand it, for the resolutions being adopted at that time.

The next order of exercise upon the program is the annual report of Mr. J. C. Bower, Treasurer of the State Board of Agriculture.

Mr. J. C. Bower, Treasurer State Board of Agriculture, then submitted the following, his annual report:

ANNUAL STATEMENT.

Showing the Financial Transactions of the Ohio State Board of Agriculture for the Year Ending December 31, 1898.

The following statement is a summary from the various itemized accounts as set forth in the journal and ledger records, making a complete showing of the finances for the year as well as the general financial condition of the Board.

Receipts from miscellaneous and State Fair sources are charged to the Treasuser, and receipts from state appropriations, to each respective appropriation fund. All disbursements herein have been by checks or orders signed by the President and Secretary.

The statement shows the balances in each fund at the beginning and at the close of the year, all of which is Respectfully submitted,

J. C. Bower, Treasurer.

RECEIPTS.

FROM STATE APPROPRIATIONS.

BALANCES FROM LAST YEAR.

In fund for the Encouragement of Agriculture	$1,032 48	
In fund for Contingent Expenses	222 55	
In fund for Crop and Stock Reporting	192 50	
In fund for Payment of Bonds and Interest	600 00	
		$2,047 53

APPROPRIATIONS FOR YEAR ENDING FEBRUARY 15, 1899.

For the Encouragement of Agriculture	$10,000 00	
For Contingent Expenses	2,400 00	
For Crop and Stock Reporting	2,400 00	
For deficiency	200 00	
For Bonds and Interest	22,536 00	
		$37,536 00
Total from State Appropriations		$39,583 53

MISCELLANEOUS RECEIPTS.

Balance in hands of Treasurer at beginning of year	$679 24	
From fertilizer licenses collected by the Secretary	11,442 55	
From County Farmers' Institute per capita allowance	8,174 25	
From sale of hay on fair grounds	192 65	
From sale of old buildings, material, fence posts, etc	85 94	
From rent of houses on fair grounds	80 00	
From manufacturers, for repairing private exhibition buildings	70 23	
From revenue stamps sold	7 12	
From net proceeds of sale of bonds	83,077 61	
From taxes remitted	45 11	
Total miscellaneous		$103,854 70

PROCEEDS STATE FAIR.

From sale of full admission tickets	$19,858 25	
From sale of children's half tickets	847 50	
From sale of grand stand tickets	2,937 70	
From sale of special tickets	217 44	
From sale of wagon tickets	36 00	
From speed entrance fees	1,930 00	
From class entrance fees	1,193 47	
From speed entrance settlements and collections by American Trotting Association	150 00	
From sale of privileges	3,078 00	
From rent of private exhibition buildings	165 00	
From Columbus Street Ry. Co., account special attraction	500 00	
From special premium offer	100 00	
From return premium	10 00	
Total State Fair		$31,023 36
Grand total receipts from all sources		$174,461 59

DISBURSEMENTS.

MISCELLANEOUS ACCOUNTS.

For old outstanding checks redeemed by Treasurer	$1,284 75	
Express and freight	298 08	
Farmers' Institute expense	7,263 34	
Fertilizer inspection, analyses, expense, supplies and printing	10,011 56	
General labor and assistance	184 88	
Interest on notes and temporary loans	36 05	
Note redemption	2,500 00	
Office expense	767 08	
Interest on bonds	2,986 00	
Bond redemption	5,000 00	
Postage and telegraph	1,922 55	
Salary of Secretary	2,500 00	
Salary of Assistant Secretary	2,100 00	
Salaries of employes in department	3,355 00	
Fair grounds, buildings and new improvements	80,772 28	
Fair ground improvements and ordinary repairs	1,227 16	
Superintendent of fair grounds	462 50	
Total miscellaneous		$122,671 23

STATE FAIR PURPOSES.

Expense of Horse Department	$290 35	
Expense of Cattle Department	93 90	
Expense of Sheep Department	56 00	
Expense of Swine Department	205 86	
Expense of Machinery and Agricultural Implement Department	330 14	
Expense of Farm Product, Fruit and Floral Department	180 50	
Expense of Woman's and Fine Art Departments	632 52	
Expense of Mechanics' and Manufacturers' Departments	98 00	
Expense of Secretary's Department	273 60	
Expense of Treasurer's Department	571 60	
Premiums	14,443 21	
Printing and advertising	3,260 14	
Labor and assistance	1,404 75	
Material and supplies	2,987 70	
Expense of members	344 73	
Refund entrance	105 25	
Meals	219 75	
Total State Fair		$25,498 00

Total disbursements on all accounts, as per checks and orders issued	$148,169 23
From which deduct the outstanding unpaid checks of present year	27 50
And there is shown actual disbursements from all funds	$148,141 73
Deducting the actual disbursements from the total receipts from all sources, and there is shown a balance cash on hand, all funds	26,319 86

This balance consists of cash in hands of Treasurer	$6,261 68
In State Appropriations—	
For Encouragement of Agriculture	2,744 73
For Contingent Expenses	1,685 45
For Crop and Stock Reporting	478 00
For Bonds and Interest	15,150 00
	$26,319 86

LIABILITIES.

For outstanding bonds of old issue	$15,000 00
For outstanding bonds of new issue	80,000 00
For outstanding, unpaid checks of present and former years	380 45
Total liabilities	$95,380 45

PROPERTY VALUE.

State Fair grounds, buildings and improvements, figured at cost up to close of 1897	$300,148 76
For grounds, buildings and improvements during 1898	80,772 28
Total cost value	$380,921 04
Being in excess of liabilities	285,540 59

At the conclusion of the annual report of the Treasurer, the President said: The next business in order is the report of the Auditing Committee.

Mr. S. H. Ellis, of the Auditing Committee, then requested the Secretary to read the report of the committee, which was as follows:

Ohio State Board of Agriculture:

GENTLEMEN:—The undersigned committee begs leave to report that it has made a careful examination of the books and accounts of the Board, and finds them correct. Each item of expense in the journal record was compared with the voucher for the same and the check or order issued in payment, and all found to agree, vouchers being correct and checks and orders properly issued and signed. The receipts, as set forth in the records, were found to be correct, and all disbursements properly authorized. The ledger shows a clear and intelligent distribution of the various accounts and funds, and accords with the journal record.

In the financial statement recorded in the journal at the close of the year's business, and presented also in the Treasurer's annual report, is found a complete summary af all the financial transactions and it sets forth the general condition as existing at the close of the year 1898, with balances, liabilities, etc.

We desire to commend the neatness of the accounts and the clear and intelligent manner in which they have been kept.

Respectfully submitted,

E. C. ELLIS,
H. S. GRIMES,
S. H. ELLIS.
Auditing Committee.

It was then moved by Mr. C. H. Ganson, of Champaign County, duly seconded and carried, that the report of the Auditing Committee be accepted, placed on file and the committee discharged.

The President: The next on the program is the nomination of five candidates for members of the State Board of Agriculture.

The President called the Vice President, Hon. L. G. Ely, of Fulton County, to the Chair, and the Vice President presided.

Mr. C. H. Ganson, of Champaign County: Gentlemen, I will not detain you with a long speech, but will simply say that I take great pleasure in nominating a man who needs no eulogy pronounced upon him. He is a man who has been tried and not found wanting. I take pleasure in nominating Mr. A. J. Clark, of Guernsey County.

Dr. W. I. Chamberlain: Mr. President, I rise to a question of privilege before anyone else has the floor.

Vice President Ely: I want to make this request, gentlemen, when a person rises to address the Chair, if the Chair is unable to recognize him and the locality from which he comes, let him announce his name and the county that he represents so that the Meeting will have the benefit of knowing who is speaking and the county for which he speaks.

Dr. Chamberlain: Mr. President, I rise to a question of privilege in regard to the question whether that resolution has been legally adopted. The report of the Committee on Credentials was read, was objected to, was not adopted, but was referred back to the Committee on Credentials for revision and correction. I hold, therefore, that the Chair should rule that no resolution can be adopted by this Association until we know who are legally voters. I hold, furthermore, that this resolution is unwise. I say, as I said before, that it has been the custom for many years of allowing nominating speeches to be made by whosoever the one desiring the nomination should select. I say, further, at this moment, just before the nominations open, it seems unwise to bring snap judgment and rule out nearly all those who have been requested to make the nominating speeches. I happen to know one gentlemen — who told me himself this morning — and I know he did not lie, for he is an editor — he told me himself that he had come here principally to nominate a gentleman from his county. I think this is not fairly adopted.

The Vice President: It seems to the Chair that this question has been settled by a vote of the meeting properly announced by the Chair, and therefore this discussion is now out of order and the Chair so holds.

Mr. Chamberlain: Mr. President, I arose to a question of privilege, holding that it had not been adopted since there is no organized body competent to vote, as the report of the Committee on Credentials has been objected to, referred back to that committee and is now in the hands of the committee, and also, I wish to say it was not wise to carry this at this time and shut off all of those who have been requested, in accordance with a time-honored custom, to make nominations.

Vice President Ely: The question of wisdom does not enter into this matter at this time. The actual fact exists that the Meeting declared that no person except a delegate should have the floor to discuss any questions that required a vote or make nominations or make motions. That is the fact as it exists.

Dr. Chamberlain: It was not that he should not have the floor to discuss. That privilege was granted him by the resolution, but it was simply that he should not have the floor to nominate.

The Vice President: As I understood the resolution all questions pertaining to agricultural topics might be discussed by anybody present, but the privilege to discuss to persons outside of delegates was limited to this subject.

Mr. C. W. Halfhill of Mercer Co.: Mr. President, are you ready to receive nominations?

The Vice President: Yes sir.

Mr. Halfhill: I desire to place in nomination the name of Mr. J. T. Robinson of Seneca County, who is a prominent agriculturist in one of the representative agricultural districts of the State, and whose location is very admirable, if you are going to take into account a matter of location. I wish to commend Mr. J. T. Robinson to the favorable consideration of this meeting as a deserving candidate for the position.

Dr. A. L. Paul of Putnam County: I rise to place in nomination a gentleman who is a practical farmer; a man who has been President of his own county agricultural society for the term of fourteen years; a person who has been a member of this State Board for one term, and who has served with credit to the State and honor to himself. I nominate Mr. J. S. Stuckey of Van Wert County.

Mr. A. C. Mastick, West Cuyahoga: I represent a county having nearly a half million inhabitants that has not had a representative on this Board since 1863. We are also from the northeastern section of the State, which is certainly one of the most important agricultural sections of the State and we feel as though we are entitled to at least one representative upon this Board. I therefore take great pleasure in nominating a gentleman who is a practical farmer, a good business man and a man who will do credit to the position if elected, Mr. L. R. Dunham of Cuyahoga County.

Mr. W. F. Roudebush of Clermont County: Mr. Chairman and Brother Delegates: I desire to place in nomination for the suffrages of this Meeting this evening your present President of the State Board of Agriculture, Mr. C. Bordwell. In doing so I take it that it is unnecessary for me to dwell— as my friend to my right has said— upon the qualifications of my candidate, for he is too well known in this State to require any such statement He was known before he became a member of your Board. He is known better today in the State of Ohio than he was then, and is favorably known. His work on your Board has been satisfactory I think to every section of this State. He represents no section, but represents the entire State. I have nothing to say against the candidacy of nominees representing different sections of the State, but in presenting the name of Mr. Bordwell I nominate him as representing all sections of this State, a man who has shown himself to be equipped and well equipped to handle all questions that come before this important Board, and to represent all of the agricultural interests of the great State of Ohio, whether it be in the north-eastern portion of the State or in the south-western portion.

Mr. Bordwell, if elected, will so represent you, and will be your faithful servant in the future as he has been in the past.

Hon. John T. Mack, of Erie County: I rise as a delegate to this Annual Meeting from Erie County and as Secretary of Erie County's Board of Agriculture, to present a name for your consideration. I take it, gentlemen, three things are needed in selecting members for this Board. First, that you select capable men, strong men, strong men personally, strong in their own locality. Secondly, that you select men who are in touch with the great agricultural and industrial interests of the State. I would not as a member of the Ohio Editorial Association select a farmer to represent me at the National Convention of Editors, nor do I think you should select any man as a member of the Ohio State Board of Agriculture who is not in hearty sympathy with your work — more than that, who is not absolutely and actively identified in the work of agriculture and horticulture and the industrial interests of the State (applause). Third, in the selection of that man you should give the matter of locality due consideration. There is a sense of fairness among men always, and you can always rely upon it, and a sense of fairness leads you and me and every other honest citizen to see to it that in the selection of your Board you do not leave one-half of the State unrepresented, nor one-third. It is not so much a question of this man or that man so far as he is concerned. It is a very much broader and a very much deeper question than that. I am going to present to you the name of a gentleman who meets all of these three requirements. He comes from a locality and from a section of the State represented by twenty counties or more that has no representative on this Board, a section extending from Toledo on the west to Cleveland on the east, along the lake shore, a stretch of one hundred and twelve miles, and south to the center line of the State. I want to tell you, gentlemen, you men engaged in the agricultural, horticultural and industrial interests of the State that the great northern half of this State bordering on the Lake is a very important section of the State. Two counties this last year turned out more than a million bushels of peaches to the market of the world. At one little station alone in a small county of this State— Ottawa County— over five hundred cars were shipped, of peaches alone. The great fruit interests of that section are enormous and are growing each year. I want a man on this Board and I know that the leading agriculturists and horticulturists of that section of the State want a man on this Board from that section who will make it a personal matter to work up the great fruit interests of that section for the State Fair, and I want to say to you as an observer at your State Fairs and having, as I said, been identified for fifteen years past with my own County Board of Agriculture, that you are not up to the high standard of the State in the matter of fruit exhibits. You are in other respects, notably in the line of stock, as your President today so well set forth, but you are not in what may be called the diversified agriculture of the State. You and I know, and every intelligent citizen knows whether a farmer or not, that the hope and the promise of agriculture for the future is diversified agriculture; and thank God, we are growing into it more and more, and Ohio is leading in that respect. I want to nominate Charles W. Taylor, of Erie County, as a member of this Board. I might say that Mr. Taylor does not seek this place. He never thought of being a candidate, but a number of our leading men interested in agriculture and Fairs thought he was the right man and proposed to him that he be a candidate, and he finally consented. He is a modest man, but he is a worker. He has been for two years past the President of our County Agricultural Society and it is an important County, as you know, with a city of twenty five thousand people as its Capital. He has been President during the two years that have tried the souls of men who have had anything to do with local fairs, and so well did he administer his trust that he was unanimously reelected as President of our Agricultural Society for a third term, although in politics we do not believe in third terms. We could not put our hands on a man who we believed would be a better man, or probably as good a man to carry our Society through and crown it with the success that we wish in this year of grace, 1899. Mr. Taylor is a worker. He is a farmer born and bred. He owns the farm he was born on. He is a stock man, interested in thorough-bred stock. He is a fruit man and grows peaches by the hundreds of bushels. He is with all that a business man, and will bring to this office business experience and the business ability that comes from experience. I take great pleasure in presenting the name of Charles W. Taylor of Erie County, and ask your serious consideration. I would like to say in closing that I hope the Secretary in printing the ballots will put upon them opposite each nominee the county from which he comes.

Secretary Miller: That is always done, Mr. Mack.

Mr. Mack: I know our Secretary is always right, for he came from Erie county.

Mr. R. E. Corry, of Greene County: I rise to place in nomination the name of a man who is a practical farmer and always has been. I take great pleasure in presenting the name of Mr. T. L. Calvert, President of the Clark County Board of Agriculture.

Mr. North Newton, of Mahoning County: I have the pleasure of nominating a man of wide experience and success in fair management, and I present him to you as a candidate for your favorable consideration. I nominate Mr. B. P. Baldwin, of Mahoning County.

Dr. T. P. Shields, of Union County: I rise for the purpose of placing before this Meeting the name of Mr. A. C. Williams, of Huron County. Mr. Williams is a competent man for the place. He represents a locality of the state which heretofore has not been fairly dealt with in the distribution of the offices. I therefore take great pleasure in presenting for your favorable consideration the name of A. C. Williams, of Huron County.

Dr. W. K. Coleman, of Adams County: I desire to present for your favorable consideration as a candidate for the State Board the name of W. S. Kincaid, of Adams County. He is a man of strict integrity, a thorough business man, a successful and practical farmer. I have been associated with him for eleven years last past as a member of our Agricultural Board. If we have made a success of our Agricultural Fair, it has been largely through the instrumentality of Mr. Kincaid. No one has brought to it more time or more ability. Vote for him, gentlemen, and he will make a good member.

Mr. C. G. Williams, of Trumbull County: I desire to place in nomination a man who also bears the name of Taylor. It seems we have several Taylors interested in agriculture. This gentleman, I believe, has all of the good qualifications and training of his namesake, whose name has been so eloquently presented by Mr. Mack. He also possesses the many good qualities of the several other candidates who have been presented. I will not take the time of the convention to enumerate them. I desire to present for your favorable consideration the name of Samuel Taylor, of Franklin County.

Mr. John J. Walker, of Morgan County: I desire to nominate Mr. D. J. Green, of Noble County. Mr. Green is fully equipped for the duties of this office, and I present him as a candidate for your favorable consideration. If you elect him he will make an efficient worker and a competent man.

Mr. T. S. Johnson, of Ottawa County: I want to second the nomination of Mr. C. W. Taylor, of Erie County, who, if elected, I know will represent the great horticultural interests of my county, which is one of the greatest, if not the greatest, horticultural county in the state, and also the other fruit growing counties along the lake.

Mr. C. W. Halfhill, of Mercer County: I desire to second the nomination of Mr. Green, of Noble County. The name of Mr. Green has been favorably mentioned at different times here as a possible candidate for the State Board of Agriculture.

A delegate: I rise to second the nomination of Mr. L. R. Dunham, of Cuyahoga County. He would be a representative man from that section of the State and would make a most efficient worker and capable member of the State Board. If elected he would be the right man in the right place, and I take great pleasure in seconding his nomination.

The Vice President: If there are no other nominations I will announce the candidates already presented as follows:

A. J. Clark	Guernsey County.
J. T. Robinson	Seneca County.
J. S. Stuckey	Van Wert County.
L. R. Dunham	Cuyahoga County.
C. Bordwell	Clermont County.
C. W. Taylor	Erie County.
T. L. Calvert	Clark County.
B. P. Baldwin	Mahoning County.
A. C. Williams	Huron County.
W. S. Kincaid	Adams County.
Samuel Taylor	Franklin County.
D. J. Green	Noble County.

On motion, a recess was then taken until 2 P. M. of same day.

AFTERNOON SESSION.

January 12, 1899.

After calling the Meeting to order, President Bordwell said:

Gentlemen, we will first hear the report of the Committee on Credentials before proceeding with the regular order of program.

Mr. C. H. Ganson, of Champaign County: Gentlemen, your Committee on Credentials has made an examination of all the counties to the best of its ability, and from the best data we can get, taking both sides, we would exclude Defiance County and let the report stand as it was, with that exception. Two other counties there was some question about, but they seem to be regularly organized for anything we could find and their representatives to this Meeting would be entitled to a seat as much as we are so far as the records are concerned. So that the only county we have stricken out is Defiance County. We do not think it is entitled to representation.

On motion, the report of the Committee on Credentials was then adopted.

President Bordwell: Gentlemen, the first exercise upon the program this afternoon is an address by Col. J. H. Brigham, Assistant Secretary of the United States Department of Agriculture, "What the United States Department of Agriculture is Trying to Do for the Farmer." I now have the pleasure of introducing to you Col. Brigham.

Col. J. H. Brigham, Assistant Secretary of Agriculture, then said:

Mr. Chairman and Gentlemen of the Board: In order to save time I have reduced my remarks to writing and beg your indulgence while I read them. It is something I do not usually do, as you know, but I am better able to keep close to the line in this way.

Colonel Brigham then read the following address:

The subject assigned me is the same as that of an address delivered last year before the Farmers' Institute in this city, and I find it difficult to avoid some repetition of what was said a year ago.

The work of the Department of Agriculture has become so extensive that it is impossible to treat it in detail on this occasion, but I will try to give you a general idea of what we are seeking to accomplish.

Our desire is to make the Department of Agriculture valuable to the American farmer and we are laboring earnestly in many directions for the accomplishment of this purpose.

Last year the total appropriation for the Department was $3,509,202. This year Congress has increased that amount by $127,000. This appropriation is divided among two bureaus and about twenty divisions, having a total of two thousand eight hundred and twelve employes. The largest branch of the Department is the Weather Bureau service, which receives $1,022,472 of the appropriation and gives employment to one thousand one hundred and ninety-five persons at various points in the United States and in the recently established stations in the West Indies.

Next in point of importance is the Bureau of Animal Industry, having an appropriation of $950,000 and one thousand and fifty employes.

The Division of Statistics has one hundred and thirty-six employes and an appropriation of $110,000; the Division of Publications, sixty-six employes and $80,000 appropriation. Various other divisions with the amounts appropriated for maintaining them and the number of employes are as follows:

Division of Botany, $28,800; twenty-one employes.
Division of Entomology, $29,500; twenty-one employes.
Division of Pomology, $16,000; twelve employes.
Division of Seeds, $130,000; thirty-four employes.
Biological Survey, $27,560; sixteen employes.
Division of Vegetable Pathology, $26,500; fifteen employes.
Division of Chemistry, $32,300; twenty-two employes.
Division of Soils, $16,300; ten employes.
Division of Agrostology, $18,100; eighteen employes.
Division of Forestry, $48,520; twelve employes.
Gardens and Grounds, $30,500; twenty-eight employes.
Section of Foreign Markets, $15,000; four employes.
Road Inquiries, $8,000; four employes.
Office of Experiment Stations, $45,000; thirty-three employes.

In all of these bureaus and divisions the most expert help to be found is employed. Each division is presided over by a man distinguished in his particular line for his wide knowledge of the work in which he is engaged.

I will endeavor to give you as briefly as I can some idea of the work carried on in these various divisions of our Department. The Weather Bureau is of more importance to the farmer than may appear at first. This service has been and is being greatly extended and improved. Within the past few months stations have been established in our new possessions in the West Indies and the Bureau has been enabled to give timely warnings of a number of very destructive storms, thus saving an incalculable amount of money to shipping. In connection with the reporting of weather conditions, the Bureau also receives telegraphic reports of the condition of crops in various localities and the effect the weather has had or may have upon them. These reports are tabulated and sent out to the agricultural and daily press all over the country. You can readily see that in this manner the Weather Bureau is of great service to the farmers, for it enables them to judge of crop conditions in other sections of the country than their own and gives them an idea of the probable prices they will receive for their products.

The Bureau of Animal Industry is doing some very valuable work. Its most important service to the farmer is the inspection of meats. This work has given consumers both at home and abroad confidence that our meats offered for sale are free from disease, and has enabled us to dispose of our large surplus at good prices.

Efforts are constantly being made to discover effective remedies for diseases of live stock. A dip has been perfected that will remove from infested cattle all fever ticks, making it practicable to ship them North at any season of the year. The value of this is almost beyond computation, as it enables stockmen south of the quarantine line to market their herds at any season of the year, and as the demand for fine beef at home and abroad is constantly increasing this removes one of the impediments to its production. Experiments have been made with an antitoxin serum for the prevention and cure of hog cholera, with the result that it has been practically demonstrated that this remedy will save a great percentage of animals that are attacked by this disease. In the experiments made by the Bureau 80 per cent. of the animals treated were saved, while a like per cent. of the herds not treated died.

It is the opinion of the Department that there is but little profit to the farmer in shipping grain to foreign countries. We believe it would be far better to convert the same into meats and dairy products and ship them to foreign markets in that form. With this end in view the Department has made careful inquiries into the conditions of the markets of Europe and Asia and has sent agents to those countries to introduce our products to the consumers there. From the information thus obtained we are satisfied that good markets can be obtained for any surplus that we are likely to produce.

Reliable crop reports are very important to farmers. They should know, without depending upon commercial agencies, something about the crops in their own country and in other countries in competition with them, in order that they may judge of the probable prices for their surplus. The Department is undertaking to do this work in an intelligent manner, and we think we are succeeding.

We believe that the farmers have suffered from unjust discrimination against our products in some foreign countries, and that the claim made by those countries that these products are not healthful or safe for human consumption is simply an effort to prevent them from coming into competition with the home producers. The Department has therefore asked for legislation authorizing an examination of foreign products shipped to this country with a view, if this policy is continued abroad, of adopting some effective measures to put a stop to these efforts to exclude our products on false grounds.

In the Division of Botany attention is being given to many things that will prove beneficial to the farmer. Through their efforts chicory growing has been encouraged so that the farmers of the western states are now able to produce all of that article we need, whereas in 1896 we imported sixteen million three hundred and seventeen thousand eight hundred and eighty-eight pounds.

The Division of Entomology has been quite successful in discovering means for checking the ravages of insects which annually do great damage to our crops. The gypsy moth, the Mexican cotton-boll weevil, the chinch bug, the Hessian fly and the San José scale are some of the insect pests which have received special attention.

The Division of Pomology of our Department is accomplishing much good work, and is ready at all times to render assistance to the fruit growers of the country.

Experiments made under the direction of the Department in the raising of sugar beets clearly demonstrates that we can produce at home all the sugar needed by our people.

The Department is coöperating earnestly with agricultural experiment stations, agricultural colleges and all agricultural associations having for their object the advancement of the interests of agriculture. The farmer is often forced to compete with adulterated and imitation articles sold as the genuine products of the farm. Some legislation has already been secured for the protection of the honest producer, and the influence of the Department will be brought to bear to secure the enforcement of all laws enacted and can be counted upon to assist in procuring other legislation that may be needed.

The Seed Division has been of considerable advantage to agriculturists, distributing many millions of packages of vegetable and flower seeds and also introducing many varieties of foreign seed procured by experts sent abroad, some of which will no doubt thrive in the United States and prove of value to the farmer.

All the other divisions of the Department are extending and improving their work so as to make it of the greatest possible benefit to the farmer. The Biological Survey is engaged in mapping out the natural life zones of the country; the Division of Vegetable Pathology in hybridizing and improving the quality and flavor of our fruit and vegetables; the Chemistry Division in studying soils and fertilizers for the same, and, in connection with the sugar beet investigation, is analyzing beets and determining areas where the beet can be profitably grown. The Soils Division is making an investigation of the physical properties of soils and their relation to crop production; the Division of Agrostology is engaged in studying the most profitable grasses for various sections of the country; the Forestry Division, the best methods of preserving our forests; the Section of Foreign Markets in procuring information and publishing useful bulletins on our trade with other countries and the Office of Road Inquiry is inquiring into the problem of how best to improve our roads.

We fully realize that the Department of Agriculture exists today because the farmers believed it possible for such a department to render them valuable service, and I assure you that it is the determination of those having the direction of the work to make it as valuable as possible to agriculture. We know that anything we can do to aid the farmer will be indirectly an advantage to all those who depend upon him for the means to sustain life and enjoy its comforts. We trust that you will feel that the Department is your friend and that you will make suggestions freely, and I assure you that they will be well received. We should be glad to have every farmer in the country visit the Department and investigate for himself the work that is being done. Recently a noted foreigner visiting our country came to spend three or four hours looking around the Department. He remained for several days and when ready to leave told the Secretary that he had seen nothing in this country in which he had become so interested as in the work of our Department, and said further that there was nothing like it in any other country in the world. He predicted that if the people of the United States do not already appreciate the work being done the time would soon come when they would do so.

I have given you, as I am aware, but a brief outline of our work, but I invite you to read the bulletins and reports sent out and become familiar with this work in detail. If you will do this it will be encouraging to you as well as to us and be to our mutual benefit.

At the conclusion of Colonel Brigham's written address he said: I would say that we will send out bulletins to any farmer who is interested enough in the matter to write for them so long as they last. They are printed for public distribution. The reports sent out are quite full and complete. Of course, as I told you in my address, I cannot go into all of these details. I have simply tried to give you an outline of what we are trying to do. We are trying to make the Department popular, not only with the farmers, but with the law making power and with men of influence throughout the country. That has not always been the effort of the Department officials, I am sorry to say, and we labored under some disadvantages when we took charge of the work, but we have thought it better to have men occupying these important positions feel friendly towards us and have cultivated their friendship with the view of securing whatever was needed for agriculture from Congress and I am not afraid to say that the Department is growing in popularity and influence. At the seat of government all of the prominent men and statesmen are recognizing the fact, and we feel rather proud of it, that this is a very important department of the government; more so than any other one department. Of course others have executive work to be done that must be attended to. The war overshadowed us a little for the time being, but we continued our work without cessation and I am satisfied that people generally will appreciate as time goes on the very important work our Department is attempting to do.

A delegate: How can we obtain these bulletins?

Colonel Brigham: If you wish to secure or obtain any number of these bulletins write to the Assistant Secretary and the letter will receive attention whether he is there or not. The office force has been instructed if anybody writes for anything that is loose—especially if he lives in Ohio—to give it to him. As you know, I do not pretend to be able to answer all of the questions that might be asked. I am not a scientific or a literary man, but we have such men there and we make them learn, and if a question comes that they cannot answer we find somebody that can answer it. If we have nobody in the Department that can answer it, we hunt somebody up that can do it. One thing that I feel proud of was the first stand taken by the Secretary. He sent to every Chief of Division a circular to this effect: "Report to me in detail just what your Division is doing to help the farmers." And every Chief understood what that meant. It meant if he had not been doing something or trying to do something, somebody else would have his place very soon, and it put him on his metal; and I am satisfied the Secretary feels that way, and if he has men that are not doing what needs to be done, he will discharge them as soon as that fact is found out and secure men who can do what is required.

The President: Gentlemen, we now have a short time to discuss the question before the house and see how many questions the colonel can answer.

Colonel Brigham: If they are easy I might answer some of them.

President Bordwell: The subject has been so thoroughly discussed by the speaker himself that there is certainly little left to be said. We are all proud of the work the Department is doing for agriculture and are certainly glad to be able to have the Assistant Secretary with us.

The next thing on the program is an address by C. G. Williams, of Gustavus, Ohio, on the subject, "A Working Library for the Farmer."

Mr. C. G. Williams, of Gustavus, then read the following address:

A WORKING LIBRARY FOR THE FARMER.

In the distant orient some thousands of years ago there lived a man of remarkable foresight, a man who has been termed wise. This man, as he gathered his few parchments about him, as he entered into communication with the great and good of that ancient day, and in turn transcribed his own thought to parchment roll, seems almost to have anticipated the Scribners and Houghtons and MacMillans of the age to come when he deliberately recorded it as his conviction that "of making many books there is no end."

What would the ancient king say today could he step into the magnificent free libraries of our land? Into that most magnificent of them all, the Congressional Library at Washington? Could he see our heavily laden mail trains bearing to almost every hamlet in the land page upon page of the ripest thoughts of the brightest minds the day and age have produced? What could he say more significant than he did say three thousand years ago: "Of making many books there is no end"? Were he of critical turn of mind, and if he took time to investigate some of our so-called literature he might revise his celebrted dictum a little and make it read: "Of the making of many of the books which I find in these United States there *ought* to be an end."

Should he drop in upon us in the midst of one of our hot political campaigns and inspect some of our political literature he might so far forget himself as to quote from his illustrious father: "I said in my haste all men are liars."

With due allowance made for all that is trifling and of little moment, for all that is unelevating and impure, for all that is base and untrue, I think we must recognize the fact that the possibilities for home education, for home training, for home culture afforded by the printed page, afforded too for a mere pittance compared with former days, thus placing this literature on the tables of our humblest citizens, that the possibilities for home studies are the most remarkable features of our civilization today. Said Emerson: "Consider what you have in the smallest chosen library. A company of the wisest and wittiest men that could be picked out of all civilized countries in thousands of years have set in best order the results of their learning and wisdom. The men themselves were hid and inaccessible; solitary, impatient of interruptions, fenced by etiquette. But the thought which they did not uncover to their bosom friends is here written out in transparent words to us, the strangers of another age."

A wonderful theme this "Books and Libraries." Too large for him who speaks to you so I have thought to narrow it down, down, down to the farmer's library; yes, down a little smaller than this even, to a farmer's working library, or, as the program has it, "A Working Library for the Farmer."

Now I am going to talk for a few moments about a few books which I have found helpful in my work as a farmer and a stockman. I shall confine myself almost exclusively to books that I have in my library; books that I consult every few days.

I am aware that people differ in their likes and dislikes. In gathering my small agricultural library I have probably purchased on the average two volumes in order to find one that was just what I wanted. I shall therefore recommend few books and cautiously.

In the first place among books pertaining to agriculture proper, I feel perfectly safe in recommending Prof. F. H. Storer's great work on agriculture. The edition with which I am familiar is the two-volume, revised edition of 1892. The work was again revised last year and is now issued in three volumes, the price remaining the same. Storer is professor of Agricultural Chemistry at Harvard University. His work would be expected to be sound from a scientific standpoint. I believe that it is equally sound from a practical one. It is addressed to "That large class of practical farmers interested in scientific agriculture but who cannot possibly find time to leave home to study it." This hits us middle-aged farmers who have found ourselves settled on the farm a little before we had intended. The work is especially strong in its treatment of agriculture in its relation to chemistry, and is entirely up-to-date. Agricultural science has made such rapid strides in the last ten years that a book written even that long ago is of little value in many ways. For this reason many works that were standard authority fifteen and twenty-five years ago have to be cast aside today.

I wish I could give you more of an idea of Storer's work. It would be difficult to think of anything pertaining to agriculture proper of which it does not treat from both the scientific and practical standpoint. It has a rightful place in a *working* library too by reason of its very complete index, of some eighteen pages. No book that is not thoroughly indexed has any right to be put on the market. Now some one is thinking that the price ($5) of Storer's work is too high and wants to know if there is not some cheaper volume that will take its place. I do not know of any book that will take its place as a great, inclusive reference work. Storer's volumes should not be compared for a moment with such assorted farm potpourri as Waring's "Book of the Farm," or Crozier's "How the Farm Pays." Good books for their day but that day has passed. There are works on agriculture not as inclusive as Storer's that are better in certain ways. I know of no volume of greater value on general farm practice than Prof. I. P. Roberts', "The Fertility of the Land." Prof. Roberts combines in his own person the scientific teacher and the actual successful farmer, and in his book we find the two working hand in hand. I wish every young man who contemplates following the agricultural life might read his introductory, "Chat With the Young Farmer." I do not know where to direct one to more intelligent counsel, to keener appreciation of the needs of the time, the needs of the farmer, if he would adapt himself to the time. The book treats of "The native plant food in the soil"; outside sources of plant food; implements of tillage, and especially is it strong on the use of the plow; conservation of moisture; irrigation and drainage; farm manures, factors which determine their quality, care, application, etc.; commercial fertilizers; rotations. It gives the most complete table of the fertilizing constituents of agricultural and other products I have ever seen in one compilation. It is an intensely personal book, the work of a practical man, of whom Prof. Bailey of Cornell says: "The wisest farmer whom I have known." The above is one of the series of volumes, each independent in itself, issued by MacMillan & Company, of New York, in their Rural Science series. Another volume of this series and one which goes well with the preceding is entitled, "The Soil," by Prof F. H. King, of the University of Wisconsin. It treats the soil from the scientific point of view, showing its formation, its relation to the world forces of sunshine, atmosphere, water, and the hordes of microscopic life. Of the latter the author says: "The farmer should never forget that the crop of these invisible organisms which is produced each year in his soil determines in no small degree the magnitude of the harvest he removes from the ground and the fitness of that ground for a succeeding crop." An eminently readable book, far removed from the text-book in style and general makeup. One desiring to know the very latest word of science relative to soils and crops, and its application to the problems which confront the farmer will do well to purchase Prof. King's "The Soil."

For myself I have felt the need of some elementary work in agricultural chemistry, a book that would begin at the very bottom, assume nothing, and which would gradually lead one on to a mastery of the principles underlying agriculture. I have purchased a half dozen different volumes of this character, most of them being prepared for elementary instruction in agricultural or public schools. There are three or four such books that I regard as very helpful. Perhaps as good a one as any is a little volume published by the American Book Co. on "Principles of Agriculture," by I. O. Winslow. Another one, "First Lessons in Agriculture," by Prof. Gulley, of Agricultural College, Mississippi. Still another, entitled, "First Principles of Agriculture," by Prof. Voorhees, of the New Jersey Experiment Station. They are all good, but my preference would be for the first. In this connection I might mention a little volume on "Practical Farm Chemistry," by T. Greiner. It is very strong in its treatment of fertilizers, their source and application.

The books mentioned thus far treat of agriculture in general, and are books that every farmer would find helpful. When it comes to special lines of farming, books devoted to special crops, stock, etc., will be found serviceable.

Corn growers will be interested in "Indian Corn Culture," by Director C. S. Plumb, of the Indiana Experiment Station. A book treating of every phase of the subject, seed, fertilizers, tillage, planting, harvesting, insects and diseases.

The potato grower will delight in studying the experiments of that greatest of potato experimenters, E. S. Carman, senior editor of the Rural New Yorker, as reported in his "New Potato Culture." He will likely want to familiarize himself too with Mr. T. B. Terry's potato gospel as recorded in his "A, B, C of Potato Culture."

The farmer contemplating any extended system of tile drainage will find it to his profit to read Dr. W. I. Chamberlain's little book on this subject. The why, how and when are made very plain by one writing from experience.

I am not as a rule very favorably impressed with so-called agricultural cyclopedias, books that treat more or less of everything. I want to make two exceptions; first, in favor of Prof. Wool's "Hand Book for Farmers and Dairymen," a book containing more varied information in its compass of three hundred and seventy-five pages than any I ever saw, with very serviceable tables for the feeders and dairymen, and all rendered available by a complete index; second, Prof. Bailey's "The Horticulturist's Rule Book," a collection of useful information for gardeners and fruit growers. Now that I have mentioned one book for the horticulturists let me mention another and perhaps the best one book of its class, Thomas' "American Fruit Culturist."

In considering books relating to live stock husbandry we shall want, in the first place, the best book to be had on feeds and the feeding of animals. From the vastness and importance of the subject it would be expected that there would be quite an amount of literature on the subject. While there is in the way of station bulletins and the like the American volumes devoted to an exhaustive treatment of the subject are few. Prior to ten months ago I think there were only two works of high rank to choose from. These were E. W. Stewart's "Feeding Animals," and Prof. H. P. Armsby's "Manual of Cattle Feeding." I believe the latter to be the more serviceable volume of the two. A few months ago there was published a most exhaustive treatment of this subject; a volume which instantly commanded the attention and approval of those qualified to judge of the value and usefulness of such a work. I mean, of course, "Feeds and Feeding," by Prof. W. A. Henry, Dean of the Agricultural College of Wisconsin. There is probably no man in the whole country better qualified to produce a work of this kind than Prof. Henry. The record of his own experience and experiments alone would make a work of great value, but it is far from being a one-man book. His personal equipment has enabled him to better judge of what the world of stockmen wanted to know, and he has gathered together the wealth of the scattered literature on the subject, bringing to his service the experiment stations of this country and Europe. It is a monster volume of over six hundred and fifty 8-vo. pages.

Comparing Henry's work with Armsby's I should say that Armsby was the stronger in his treatment of animal nutrition, the manner of the production of milk, the formation of flesh; while Henry is much more exhaustive in his treatment of feeding stuffs, the results of all manner of feeding experiments with cattle, horses, sheep and swine, and their feed and care. The man who wishes to feed intelligently and profitably will, I think, find the purchase of Henry's "Feeds and Feeding" the best investment he ever made.

Mention should be made here of Prof. Woll's "A Book on Silage." This is the best and most complete work that I know on the silo, its construction and cost; silage crops; filling the silo, and the comparison of silage and other feeds. And what may be of interest to some, this book is given away by one of our manufacturers of silage machinery.

Now, equipped with such a work on feeding and relative subjects as Prof. Henry's, the stockman needs but few other volumes, depending upon what branch of live stock husbandry he may be especially interested in.

I should not fail to mention Warfield's "Cattle Breeding," which, I suppose, by common consent stands at the head of its class.

Also "American Dairying," by H. B. Gurler, a treatise on dairy farming and the management of creameries, probably as good as any other one volume; and "Milk and Its Products," by Prof. H. H. Wing, of Cornell.

The shepherd will likely find in Stewart's "Shepherds' Manual" as much help as in any volume devoted to sheep husbandry, while the horseman will receive much benefit from the study of Saunders' "Horse Breeding."

When it comes to poultry literature we find that the barnyard fowl has attracted as much or more attention than any of our domestic animals. Yes, more wild, worthless books and pamphlets sent out on the hen than on any other animal. During the years in which I suffered from the hen fever—I am convalescent now—I purchased a number of poultry books. If you want the best get "The Business Hen," by H. W. Collingwood, with special articles by a number of the most successful poultrymen of the country.

I suppose that an agricultural library which did not have a volume or two on the diseases of cattle and horses would be incomplete. Happily there are two such volumes which one need have no hesitation in recommending. I refer to those volumes prepared under the direction of Dr. D. E. Salmon, Chief of the Bureau of Animal Industry of our National Department of Agriculture; the one being on "The Diseases of the Horse," and written by eight of the most skillful veterinary surgeons of the country, published in 1890, and the other on "The Diseases of Cattle," and similarly prepared. The latter concludes with a valuable chapter on cattle feeding by Prof. Henry. These volumes were originally prepared for free distribution among the farmer friends of our congressmen. The bulk, or at east a good share of them, soon found their way into the hands of our veterinary surgeons. I believe that a second edition has been printed and it may be possible to secure a copy through one's congressman.

I think I ought to call attention to the great amount of very valuable literature that can be had for the asking. I refer of course to the work of our experiment stations. Do you know that we are conducting fifty-four of these stations in the United States? Now these stations issued during the last year over four hundred bulletins treating subjects of vital concern to us farmers.

For instance, are the Connecticut stations investigating questions in which you are interested? A letter sent to Director Johnson, of New Haven, or Atwater, of Storrs, will secure any bulletin you desire. Just consider some of these bulletins. Take our own station, and there is none doing better work. Take Prof. Selby's "Ohio Weed Manual," issued last year. I should not know where to go with any amount of money to secure a volume treating of weed questions in general, and Ohio weeds in particular, with means of identification, etc., as thoroughly as does Prof. Selby's manual. Then, if you are interested in the question of fertilizers take Director Thorne's bulletin No. 93, on "The Home-mixing of Fertilizers," in which we have a very complete presentation of the subject of fertilizers; suggestions that have saved and will save thousands of dollars to the farmers of Ohio in so far as they are followed.

If one happens to be interested in feeding the dairy cow there is bulletin No. 149, of the Michigan Station, by Director C. D. Smith; a bulletin that will furnish the dairyman food for a month or more.

In the silo as an economical preserver of the corn plant consult bulletin 122, of the New Jersey Station.

In the production and care of farm manures consult bulletin No. 27, of the Cornell Station, and get the ideas of Prof. Roberts.

There is no end to these bulletins. The vastness of our experiment station literature is appalling. One can keep track of it to some extent by subscribing to the "Experiment Station Record," a monthly publication issued under the direction of our National Department of Agriculture at one dollar per year.

Much of our best agricultural literature comes by way of the press. It would hardly do to pass the agricultural paper by without a word. Since I have been considering with you the books which I have found helpful—only three or four of those mentioned are absent from my table—I will continue to be personal and tell you the agricultural papers that we, of Elmwood, look over every week with no little interest.

I am disposed to put the "Country Gentleman" at the head of the list. I do not know that I care to say that it is better than the others, but it is certainly first class in every way. Then there is the "Rural New Yorker"; bright, inclined at times to be a little startling, always on the lookout for the new things in agriculture. The "National Stockman"; clean, delightful to the eye as well as the understanding; and our own "Ohio Farmer"; staid, conservatively aggressive, practical. These with "Hoard's Dairyman," a paper no man who keeps and cares anything for a cow can afford to be without, and the "Breeders' Gazette" are the weekly additions to our agricultural literature.

I said in beginning my paper that I should confine myself to "A Working Library for the Farmer." I shall do so, only suggesting that the farmer do not confine his reading and the reading of his family solely to agricultural matters. Give the family a little insight into the other sciences (and you will look a long time to find anything better to begin with than the little science primers issued by the Appletons) and into general literature as well.

I chanced once to drop into a farm home where the only scrap of print in evidence anywhere was an advertisement of Hood's Sarsaparilla. Living, can we say living, all unconscious of the Shaksperes, Emersons and Burroughses—the Scribners, Houghtons and MacMillans that are daily bringing to pass that which was said by the ancient Hebrew king: "Of making many books there is no end."

At the conclusion of Mr. Williams' address the Chair said: We now have a short time for a discussion of this paper.

Mr. J. L. Roudebush, of Clermont County: I agree heartily with what the speaker has said in his paper, but I think in this great State of ours there is a necessity on the part of the average farmer to know something about his insect friends and insect enemies. Hence, I would add a standard work to the farmer's library on the subject of Entomology, such as Saunders' or Smith's. It is strange—passing strange—that the average farmer knows so little about things that give him more trouble than anything else. The insect pests of Ohio are levying a tax on us each year of about fifteen to twenty million dollars, and a very large percentage of that amount could be saved if we were able to know our friends from our enemies.

Prof. William R. Lazenby, of the Ohio State University: I was very much interested in the paper by my friend Mr. Williams. He began and ended his address with the quotation that "in the making of many books there is no end," but the thought occurred to me that we can get some satisfaction from this fact, that there is a very speedy end to a large number of books that are made. In other words, if books are not good, if they do not meet the demand, they come to a very speedy end. I was a little surprised that Mr. Williams did not mention Johnson's books on "How Crops Grow" and "How Crops Feed." It seems to me for a young farmer who wishes to begin as he stated, and work up a knowledge of the underlying principles of chemistry particularly there are no two books better than those edited and given to the world by Prof. Johnson on "How Crops Grow" and "How Crops Feed."

Mr. O. E. Bradfute, of Cedarville, Ohio: Mr. Williams in his list of books named two books that to me are very highly prized. It is not often the case that we like best the things which seem to cost us the least, but there are two books that every man who is interested in live stock and especially horses and cattle, should have, which are published by the Department at Washington, and those are two veterinary books, one upon the diseases of horses and the other upon the diseases of cattle. I want to say to the average farmer that he will never find anywhere two more valuable books than the two suggested. They are written in plain, simple language, something that he can easily understand, and from which he can gain valuable information from the standpoint of a veterinarian. He will find those two books almost indispensable. I want to ask Colonel Brigham whether at present there has been a measure to increase the number of those two books, the one on the diseases of the horse and the other on the diseases of cattle. They are very valuable to the farmer.

Colonel Brigham: There have been one or two additional editions published, but whether there is a provision for publishing them now or not, I do not know. I am inclined to think there was a provision made for their publication, especially the book on the diseases of cattle. You can ascertain that fact, whether you can get the book or not, by writing to your Congressman. I will say on these republications the Congressmen are not very generous with the Department of Agriculture. They take the whole of them for themselves and distribute to their constituents, so that if you want those books you will have to depend upon your Congressmen for them.

Mr. John G. Ickis, of Jefferson County: In addition to Stewart's Shepherds' Manual as a book for the sheep men of Ohio I would like to add Stephen Powers' works on American breeding. Mr. Powers is an Ohio man and an Ohio shepherd. I remember as a boy reading his articles in the Ohio Farmer and other papers, and I thought then if I could just write like Stephen Powers it would be the fulfillment of the ambition of my life, and when these articles were gathered up and published in book form I find that I never go to Stephen Powers' work for anything regarding the merino or the wool growing industry without finding just what I want to know.

Col. J. H. Brigham. Mr. R. L. Holman tells me that he has just received one of those books about which Mr. Bradfute inquired—the book on the diseases of cattle, recently published, and therefore I would suggest that if you write to your Congressman direct for a copy of the book on the diseases of cattle you will probably receive it.

President Bordwell: The next exercise upon the regular program is an address by Prof. C. A. Zavitz, Director of Coöperative Experiments, Agricultural Experiment Station, Guelph, Ontario, on the subject, "Important Results from Growing One Thousand Varieties of Farm Crops for Five Years in Succession."

Prof. Zavitz then delivered a very valuable and acceptable address, which was not furnished for publication.

At the conclusion of the address of Prof. Zavitz, the following discussion was had:

Mr. Stewardt: Professor, I notice that you skipped potatoes, which is a matter of considerable interest to us, and I would like to inquire what has been the result of your experiments with regard to potatoes.

Prof. Zavitz: The potato experiment I did not say anything about, because it is rather complicated. You will notice by the figures on this chart from planting large whole potatoes we got three hundred and thirty-seven bushels per acre.

Mr. Stewardt: Without cutting?

Prof. Zavitz: Yes; but understand I am not advocating planting whole potatoes at all. That is not the point under consideration, but I say from planting large whole potatoes without saying anything about the amount of the seed used—from planting large whole potatoes we got three hundred and thirty-seven bushels. From planting medium sized we got two hundred and seventy-three bushels and from planting small potatoes we got two hundred bushels per acre.

Mr. R. L. Holman, of Clark County: What would you call a small potato? Do you mean a small marketable potato?

Prof. Zavitz: Yes, I mean potatoes about an inch and a half in diameter.

Mr. Holman: Don't you ever cut them?

Prof. Zavitz: Oh, certainly we do.

Mr. Holman: What is the result then?

Prof. Zavitz: The gentleman asks what is the result of cutting potatoes. Perhaps I would better run over this experiment a little more in detail. It will only take me a moment. For six years in succession we have carried on experiments, in three different places each year, and the experiment is this: On No. 1 plot we planted large whole potatoes a foot apart in the row. They were very large potatoes, as large as we could get. In the next plot we planted large whole potatoes two feet apart in the row. In the next plot we planted large whole potatoes three feet apart in the row. In the next plot we planted medium sized whole potatoes a foot apart in the row, and in the next medium sized whole potatoes two feet apart in the row, and in the next small potatoes a foot apart in the row. Then in the next plot we took medium sized potatoes and cut them in halves. Then in the next plot we took medium sized potatoes and cut them with two eyes in each piece and put this seed a foot apart in the row. Then we took medium sized potatoes and cut them one eye in a piece and for the last plot we simply cut out the seed end and put them a foot apart in the row. Without any one single exception we obtained the largest yield per acre from the large whole potatoes one foot apart in the row. But then, I certainly would not recommend that. In the first place it takes too much seed and in the second place there are too many small potatoes. But, to get at the exact amount of increase you should subtract the amount of seed used from the amount of crop obtained. If we subtract the amount of seed used from the crop produced we obtain the largest average yield per acre from planting medium sized whole potatoes a foot apart in the row.

Mr. R. L. Holman: Marketable potatoes? Do you have reference now to something that would sell upon the market?

Prof. Zavitz: Certainly; medium sized potatoes, potatoes about two inches and a quarter in diameter. I would recommend from that experiment to plant a little wider apart—medium sized whole potatoes—say about fifteen inches apart in the row. You would have to govern yourselves in this respect depending upon circumstances. If potatoes are scarce and high priced it would perhaps be better to make smaller pieces, but if potatoes are low priced and plenty I believe it would be better to plant large potatoes. I have found that a great deal depends upon the size of the piece of potato you plant in the ground. It does not matter very much in regard to the number of eyes. It makes a little difference but not very much. But a great deal depends upon the size of the piece put in the ground. We conducted an experiment by putting in pieces of potatoes with one eye in each piece. In the first plot every piece weighed exactly one-sixteenth of an ounce and the plot was about four rods long, and we had several plots like that. One eye in each piece weighing one-sixteenth of an ounce, and in the next plot every piece weighed one-eighth of an ounce; the next one-fourth of an ounce; the next one-half of an ounce, and the next one ounce, and in the next plot every piece was two ounces in weight. We have conducted that experiment for four years in succession and it is very interesting; as you notice the crop when growing you will see a difference in the tops, in about the same proportion as the difference in the size of the seed which were planted in the ground. When we came to dig the product and lay it along in piles we saw almost the same proportion in the yield per acre as in the size of the pieces put in the ground. In other words, we got the smallest yield from the smallest pieces and the largest yield from the largest pieces having one eye in every piece in every instance, and all planted under exactly the same conditions.

Mr. Holman: I notice in your chart with reference to wheat that there is but one variety which weighed over sixty pounds. Is it generally the case with your wheat there that it is a light-weight bushel?

Prof. Zavitz: We find as a rule that the largest yielding varieties are not the heaviest. Some of our heaviest weights yield considerably less per acre than some of the medium soft wheats. The varieties that yield the best are not the hardest wheat but they are medium in hardness. But we find that the hardest wheats are weak in the straw and do not give the same yield per acre.

A delegate: I would like to ask the speaker about Dawson's Golden Chaff.

Prof. Zavitz: Dawson's Golden Chaff is a smooth wheat with a stiff straw and has a grain of good milling quality.

Mr. Holman: Has it a soft grain?

Prof. Zavitz: It is medium in that respect. It is only a medium milling wheat. It has a red grain, medium quality of milling wheat. We find that our red wheats weigh about one pound more to the bushel than other wheats. But Dawson's Golden Chaff is about an average wheat.

Mr. C. W. Halfhill, of Mercer County: I would like to ask the speaker whether he has made any experiments with potatoes in the first sprouts that grow or the second sprouts.

Prof. Zavitz: No, we have had no experiments of that kind. We have taken potatoes and in the spring of the year tried to keep them from sprouting, and planted them, and we have also taken potatoes which have already sprouted and left the sprouts on and on others we have taken the sprouts off and so on and have conducted experiments along that line. We find that we get better results by not letting them sprout but we find this, that if we let the potato sprout especially in a medium warm place where we plant the potato with these little sprouts on we hasten the crop several days. If we want early potatoes and want a very early crop by putting the potatoes in medium light and medium heat for some three or four weeks before planting and getting some little green sprouts on them and then plant them in that way we have found we would get an earlier crop of potatoes.

Dr. W. I. Chamberlain, of Summit County: Don't you think that wheat softens as you go south? I ask because we are practically on the extreme southern limit in northern Ohio of good milling Clawson wheat. On my farm we have had a yield of sixty-one bushels per acre on five acres, but find that it is a little soft for milling and we have noticed that further south you go the softer it gets. I would like to inquire if that is not true of all wheat that as you go south in the climate the wheat softens?

Prof. Zavitz: I think the doctor is right in that respect. We cannot grow as hard wheat as they grow further north, for instance, in Manitoba they can grow a hard kind of wheat, whereas we cannot grow the same kind compared with them at all. I would simply say in regard to early red Clawson that the millers have a greater objection to that wheat than any other variety of wheat. I was talking to some of our millers last autumn with reference to Dawson's Golden Chaff and they said that the only wheat they had any objections to was the really red Clawson variety. The millers seem to think the least of that variety.

Mr. F. A. Derthick, of Portage County: I would like to ask the speaker if he does not think that planting whole potatoes a foot apart is not putting too much seed in the ground to get the best results. Wouldn't you get a larger yield with your potatoes farther apart?

Prof. Zavitz: Our experiments bring out that point very well. We had medium sized whole potatoes a foot apart in the row, and medium sized whole potatoes two feet apart in the row and medium sized potatoes cut in halves and those halves put a foot apart in the row. Of course where we use the potatoes cut in halves it would only take one-half as much as where they were used whole. After we subtract the amount of seed used from the amount of the product obtained we still have remaining the largest average yield per acre from the medium sized whole potatoes a foot apart in the row.

Dr. Chamberlain: That is, you mean, professor, the net increase above the seed?

Prof. Zavitz: Yes, the net increase over the amount of seed used. I would say this, that medium sized whole potatoes gave us an average of about 88 per cent. marketable potatoes. Where we have two eyes in a piece we get an average of 90 per cent. marketable potatoes, and where we have one eye in a piece we get an average of 91 per cent.

Mr. Derthick: You mean average sized seed potatoes?

Prof. Zavitz: Of course we use the medium sized seed and in one case we planted whole potatoes and in one plot we took medium sized potatoes and cut them in pieces with two eyes in each piece, and then in the third plot we took medium sized potatoes and cut them with one eye in each piece and the whole potatoes, medium size, gave 88 per cent. marketable potatoes, and the smaller pieces with two eyes in a piece gave 90 per cent. marketable potatoes, and the still smaller pieces with one eye in a piece gave 91 per cent. marketable potatoes, a less yield but a little higher percentage of marketable potatoes.

Mr. Derthick: As a result of your experiments I would like to ask what would you choose as the best seed potatoes as to quantity and distance apart and as to size in raising potatoes for the market, such as would be the case with a potato grower?

Prof. Zavitz: As I said before it depends upon circumstances. If the seed was scarce I would cut the potatoes into pieces with about two eyes to the piece; but if the seed was plenty and not very expensive I would prefer planting medium sized whole potatoes about fifteen inches apart.

Mr. Derthick: I mean regardless of the cost of the seed.

Prof. Zavitz: Regardless of the cost of the seed I would prefer planting medium sized whole potatoes about fifteen inches in the row.

Mr. R. H. Wallace, of Chillicothe: Have you made any experiments in cutting the seed lengthwise of the potato, if so I would like to hear the result of your experiments in that regard.

Prof. Zavitz: We have not.

Mr. Wallace: There is a kind of tradition in southern Ohio that that makes some difference.

Mr. Holman: You say you plant your potatoes so far apart in the row. Now I would like to inquire how far apart you plant your rows in your experiment?

Prof. Zavitz: About twenty-eight inches. In regard to this question I would say a word also, that we have not carried on experiments just exactly in that line, but we have conducted an experiment which is somewhat similar to that which has just been mentioned. We have taken the eyes from the samller end of the potato and the eyes from the middle of the potato and the eyes from the large end of the potato and planted them several years in succession, carrying on the experiments in two or three different places, and we find that there is but very little difference between the yield from those different plantings; but remember that in every case we use the same sized pieces and but one eye in each piece in order to find out the strength of the eye in the different parts of the potato.

Dr. Chamberlain: Do you cut away the many eyes at the end of the potato?

Prof. Zavitz: Well, I do not think there is very much in that. I have noticed this, that if you plant a potato usually there will be a few sprouts starting first and those will grow and all the rest of the potato will feed those few sprouts. I have examined a good many potatoes and I have found that not nearly all of the sprouts will start. Just a few will start and the rest of the potato will help to feed those few sprouts.

Just to illustrate that, we conducted another experiment in which we put in all pieces of the same size but for one plot we left just one eye in each piece of potato and in the next plot we had two eyes in each piece, one ounce to the piece—each piece weighing exactly one ounce—and in the next plot three eyes in each piece and in the next plot four and in the next five. Now from those hills where there was one eye in each piece there was an average of about three stems to the hill, but where we had five eyes in a piece we found an average of about four and one-half stems to the hill, so you see there is an increase from one to five eyes and an increase of only from three stems to four and one-half stems; hence the increase in the number of stems in the hill is not in the same proportion as the number of eyes in the pieces planted.

Director C. E. Thorne, of the Ohio Agricultural Experiment Station, Wooster: I want to say just a word here and I will be as brief as possible. It was my good fortune two years ago this past December to visit the Experiment Station at the Ontario Agricultural College. When I landed there the ground was covered with snow, but I have always believed that it was for my especial benefit that the snow went off before the next morning and I was able to go out and go over the work where the plot experiments were being conducted, and I saw there lying out on the great broad slope such a sight of plot experimentation as I had never before seen. The plots were small but there was that evidence of the most extreme care in the preparation, the laying out, the planting and the caring for these plots which brought me home a humbler man myself so far as our own work was concerned, although we have tried to exercise extraordinary care in this work. I can say that the care which was being exercised at that station is such that no man who has visited it and inspected for himself the work going on can help coming away convinced that the work is of the most accurate character that can be devised under the limitations of field experiments.

Mr. Stewardt: Mr. Chairman, if I do not intrude upon the rights of the members of the Board, I would like to say that it is not often we get a chance to pick at Canadians as might have been suspected by the number of questions which have been put to the speaker, but on the other hand I believe that the questions were propounded by reason of the fact that this is a very interesting subject which has been handled in a most excellent manner, and therefore if it is not out of the way I would like to move right here and now that this meeting extend a hearty vote of thanks to Prof. Zavitz for his interesting and instructive lecture.

Mr. Derthick: I will second that motion, and suggest that as a mark of respect to Prof. Zavitz a rising vote be taken.

Motion carried unanimously by a rising vote.

President Bordwell: We will now listen to an address on the subject, "Training and Care of the Farm Team," by Mr. H. P. Miller, of Sunbury, O.

Mr. H. P. Miller then addressed the meeting as follows:

TRAINING AND CARE OF THE FARM TEAM.

Whatever may be said of the displacement of the horse in our cities by other motive powers, the horse is continually becoming a more important factor upon our farms. While the horse was furnishing the power for nearly all methods of transportation, man himself was furnishing the power employed in nearly all the operations of the farm. Now, muscular labor of man on the farm is almost entirely displaced by that of the horse. The farmer of a generation ago had to be an expert in the use of the scythe, cradle, hoe and pitchfork. Now, the farmer is a teamster and machinist.

This topic was suggested by my observation that the weakest point in the equipment of many farms is that of the teams. They are inefficient in the first place, because not adapted by breeding for the work required of them. Secondly, because they have been poorly developed and are improperly fed and cared for, and most important of all, they are not trained for their work.

It is all but the universal thought of farmers, that if a horse is "bridle-wise," that if he can be controlled at his regular work by the rein, he is a well broken horse, and that is all the education he is capable of receiving, or that it would be profitable to give him.

While yet a boy at home, I had, what I then thought was only the pleasure of attending a show in my home village in which the principal entertainment was performances by trained dogs and horses.

That fifteen cents and few hours expended upon me was the richest in return of any that was spent upon my education. That show disclosed to me the possibilities of the horse as I had never dreamed of them before. It incited me to the training of a colt in my father's stable during a subsequent winter.

The hours spent training that colt taught me more than it did the colt. Still his training doubled his value for actual service upon the farm. I learned the principles that underlie the education of a horse. He learned to do very many things that has, ever since, made him appear an animal of superior intelligence, at times even appearing to reason. But the horse does not reason. He does not group facts and draw conclusions. He learns only by repetition, through association. A certain sound suggests a certain movement on his part, or one act leads him to another. The education of the horse is simply the fixing of habits. The horse minds not because he wills to obey but through the force of habit. He acts mechanically as did the old soldier of whom the practical joker took advantage. He was carrying a basket of groceries on his arm when some one shouted, "Company! Attention!" Involuntarily, down went his hands at his sides, the basket tumbling to the street. The first thing then in the education of the horse is the education of the trainer to the understanding of horse nature. He must realize also that a prerequisite for control of the horse is control of one's self. Then before beginning the training settle upon a fixed vocabulary to be used with the horse. Have a single expression for each desired movement, never using it for any other purpose in the hearing of the horse, nor using any other expression in its stead. Herein lies the most grievous error of those who "break" horses. They keep them confused through their loose use of terms in directing them. They click when the horse is wanted to step over in the stall, when he is wanted to raise a foot from a line or halter strap and when he is wanted to go forward. The word whoa is used to quiet the horse, when he is wanted to slacken his pace and when he is wanted to stop. This loose use of terms destroys their value. The word whoa should signify a sudden stop and nothing else.

Other expressions should be used with similar exactness. It is immaterial what expression is used for any particular movement but it is of paramount importance that it always be used in the same connection.

It cannot be urged too strongly that colts be handled and made amenable to the halter while yet a man can handle them in a pure test of strength. A colt that has once learned that a man can overpower him is not likely to discover his superior strength later in life.

When a colt has been allowed to run at large until old enough to be put to work, get him into an inclosure, preferably a box stall, where he cannot escape from you. Feed him from a basin held in your hand, then use the curry comb and brush. These will win almost any horse. In this way get him quiet enough so that the halter may be placed upon him without frightening him. It is not safe to tie a colt solidly at once. He should be accustomed to the halter first. Apply what strength you can to the halter but rely largely upon the inclosure to convince him that he cannot escape you. Do not discontinue the first lesson until he will yield to your traction upon the halter, and will allow you to approach him and place your hand upon his nose or neck.

He may then be tied to the manger, taking the precaution to have a halter so strong that he cannot break it. The first week will determine whether the colt will be a halter puller or not. If he never succeeds in breaking loose, he will very soon quit trying. A single break accompanied by a bad fright may ruin him for life. The horse has a memory like an Indian.

He should then be accustomed to the bridle and harness before he leaves his stall. Put them on him every day, or better twice a day, rein him for a half hour at a time. That is the easiest and most effective way to bring him under control of the bit. By all means use an open bridle. Let him see that the chafing of the harness comes from nothing he need fear. I want to urge just here the abolition of the blind-bridle. I can think of but one instance where blind-bridles are of any value. That is in the case of a lazy horse that makes a quick start as you raise the whip before you have the satisfaction of hitting him.

As soon as the colt appears at ease in his bridle and harness while in his stall, he may be led out with them upon him. It is not advisable under any consideration to hurry him into a team. He cannot be of service there at once and that is not the best way to educate him, for the education of the farm horse involves far more than simply bringing him under the control of line and whip.

With the vast majority of farmers, a colt that is "bridle-wise" is broken. That is considered the beginning and ending of the colt's education. I hold that to be in the colt's education only what reading is to the boys, a means that makes education possible. The colt in that has learned nothing except that you can control him. That is of foremost importance for a serviceable horse, but if we never take him beyond this in his lessons we realize only one-half his worth as an animal of service.

The contrast is no greater between the hireling who must be directed in the details of every task and the farm foreman, who can carry on the work without the presence of the proprietor, than that between the "bridle-wise" horse and the trained horse. I believe most thoroughly in skilled labor, and in horses as well as men. Hence, as teaching him to work is only a small part of his education, I am in no hurry to hitch him beside another horse. Indeed, the stable is the proper place to give him much of his education. It is the best place because you can there better control him.

From the primary room, the box stall, pass him to the next room, the single stall. There teach him to step over sideways from either side, teach him to move backwards. Do not depend upon his learning this from being removed two or three times a day but repeat the lesson in rapid succession for a half hour or longer, if necessary, until it is thoroughly learned. Remember to use the one word "back" and that only, adding clearness of articulation and force of tone instead of unholy expletives. After he has once backed out, quiet him, if he has become excited, and lead him again into the stall and repeat. Keep this up until he will step backward freely at the word, when the lesson will be learned for life and all circumstances and will be of immeasurable value to you a million times—should you both live long enough.

He should then be taught to back at the command when you are behind or not even near him. This lesson should be continued into the higher room, which may be the barn floor or a shed similar in size. Here he should be taught to step backward rapidly across the apartment then to advance to you, to turn to the right and to the left and to go from this to his own stall. All this may easily be taught him during the winter before he is old enough to go to work. These lessons will be of great value in themselves but of greater value in teaching the horse to obey at the word of command. The culmination of training is to bring the horse to act at the *word* rather than to wait for traction upon the lines and the stroke of the whip.

Decide which side your colt is to work upon before he is hitched with another horse then put him to work there from the first so that the habit of coming to the tongue upon one side will be fixed as soon as possible. This will save time and much annoyance, occasioned by the untrained horse getting on the wrong side of the tongue. Another important factor in making a team pleasant and efficient at their work lies in keeping the same two horses together so that they may understand each other; each will know just how quickly the other is going to start and each will know the strength of the other. Of course, the team should be well mated as to temperament, size, strength and speed. As a matter of satisfaction, I would have them mate in color and carriage. It is desirable to have them near the same age that they may be kept together for many years. I protest against the frequent changing of horses simply for the sake of changing or trying to beat the other fellow.

No other business man has greater need of a first class team than the farmer, no other has so good an opportunity to get and keep a first class team. Still the farm teams of the country are not a credit to the profession. It is only a new application of the truth expressed in the adage: "The shoemaker's wife goes barefooted." With the variety and abundance of feed upon our farms our horses generally show neglect and unwise care.

Farmers generally do not know that the horse's stomach normally holds only three gallons and they attempt to crowd a two-bushel basket of hay into him and then allow him to drink four or five gallons of water upon top of it. The horse of all animals except the hog needs concentrated food. He should never be compelled to live upon hay nor should he be fed more at one time than he will eat up in thirty minutes. Even less than that at morning and noon feeds when at hard work. This should be preceded by watering, but should be given before feeding grain. A light feed with time to digest it is better than a heavy one without time for digestion. Let the heaviest feed of the day be given at the close of the day's work. Never give a larger feed than usual just before hard day's work or drive.

Water frequently but not in large quantity. In the hot days of summer when a man desires to drink about every hour, it is cruelty to compel the team to go without from one feed to another. Contrive some way to get them water more frequently, if in no other, haul it to the field with you. I want to say with emphasis that a horse never gets too hot to drink a few swallows. Every one knows that the horse that has stood idle for some weeks or even days, cannot endure as much exertion as though he had had regular daily work, yet few realize the extent to which this is true. Very many horses are over taxed the first week of spring work. Make it a business to give every horse intended for spring work some work during the winter.

The mistaken kindness that works greatest injury to the horse and lessens his ability for service is that of allowing him to cool off during the day. A horse that has been made to sweat profusely at his work should not be allowed to rest so long at a time that perspiration will cease. Stop often rather than long. The race horse man never lets his charge cool off after he has warmed him in the morning until after the race is over. If he did he might as well keep out of the race.

One other practice of many farmers is to be discouraged, that of turning their horses into the field at night as soon as the pastures start in the spring. Allow him a little grass daily as an appetizer, but do not allow him to gorge himself with it.

If now you will act upon my suggestions, I will dismount and leave my hobby-horse with you.

President Bordwell: The next exercise upon the program is an address upon the subject, "The Relation of Farming to Manufacturing—Legislation," by R. H. Wallace, Chillicothe, O.

Mr. R. H. Wallace, of Chillicothe, then addressed the meeting as follows:

Mr. Chairman and Gentlemen:

I would very gladly, since the hour is getting so late, omit entirely this closing address, but since I am on the boards I will consume a little of your time in discussing the economic question which has been assigned to me for this occasion. There are two classes of people among us who produce the wealth of the country.First, they who change the bulk of things. I mean by that the man who can take a bushel of wheat and make forty bushels out of it; the man who can take a bushel of corn and make two hundred bushels from it, or the man who can take anything and increase its bulk according to the Scripture measure thirty, sixty and even one hundred fold. Second, they who change the form of things. The man who can take a piece of wood worth one dollar and change it into a piece of furniture worth twenty dollars. The man who can take a pound of steel worth four cents and change it into main springs for watches worth one thousand dollars, or as a mathematical friend at an institute I attended recently had it, one hundred and thirty-six million dollars worth, if you put it into the form of hair springs. This class includes all manufacturers.

Now whatever we find in the industrial world outside of these are simply accommodations. He who changes the location of things is a great accommodator. He who can take a stick of timber where it is useless and transport it to a place where it is worth money. All the middle men in this industrial hive of ours are the men who are the accommodators and in this great industrial world we are absolutely interdependent upon each other for success. And I want briefly to illustrate this truth. I have sometimes heard men boast of their independence and show a disposition to swagger and strut a little about it, and yet these very men are absolutely dependent upon the balance of the world for their comforts, nay their very evistence. I have sometimes heard men praise others for their independence, but when I have tried to analyze that thing I have usually found it to be their impudence rather. Let us stop and inquire who is the most independent man. I have never read of but one class of men in this world who were independent. I have never seen one of them but I have read something of them. The independent man lived in this country many years ago. He owned the farms you hold the deeds for now for aught I know. He hapened to find a sharp stone. I do not know how he came here, probably like Topsy, he just growed. He took that sharp stone and cut off a piece of timber and formed it into the shape of a bow. He cut some grass and made a string; he cut off another stick and made an arrow, and with another sharp stone he put a point upon the arrow and then he went out and slew a bear. He made himself a coat from the skin of the bear and then he dressed the meat and made food for himself and he was absolutely independent of all the balance of the world. He lived here a good many years ago. But stop and think for a moment how would we fare, any of us, if we were thrown on our own resources absolutely. Not like Robinson Crusoe on his island, for he had some of the gifts of civilization there. But suppose we were thrown on our own resources what would be the result? What would be the result for a man making for himself a home for instance, that strange museum that we call a home; did you ever stop to ask yourself how many of the people of this world you have had to draw upon to make a home? Now, Mr. Chairman, if your wife has you under as good control as mine has me, when you get home at night you do not throw your hat on the floor but you have a nail to hang it on. I have found that it was conducive to domestic harmony to have that sort of an arrangement. I wonder to about how many people I am indebted for that nail on which I hang my hat and coat? Start back to the man that made the tools; still further back to the men who made the furnaces and the men who dug the ore and the coal and who are engaged in this great industry of making nails. Trace it down to the man who sits in front of the nail machine with his little piece of hot iron with its monotonous motion all day long, cutting nails. Then trace it down through the middle man until you buy it from your own hardware dealers, and some man who had an eye to figures and statistics has estimated that I was dependent upon the industry of about twelve millions of people to get that nail on which I hang my hat at night. Now then just for a moment see whom you have to draw on to make this thing you call your home with its comforts and with its ornamentations and with its elegances? You have had to draw on almost the entire manufacturing world for what it has been made of. Did it ever occur to you that the higher the state of civilization you live in the greater is the interdependence of classes upon one another? I am not an Antedeluvian, and yet I can remember away back when we were not so absolutely dependent upon the world for what we enjoyed and what made life comfortble as now. I remember when we used to sow flax, and pull flax, and thresh flax, and spread flax, and rot flax, and break flax, and swingle flax, and hackle flax, and spin flax, in order to get our summer clothes, and it would not be an uncomfortable suit yet with the thermometer in the nineties, though it scratches a little. I would not care if I had one some hot day next summer, should I live so long. I remember when we used to keep sheep and I recollect very distinctly all the processes through which we took the product of the sheep and manufactured it into comfortable, substantial clothing, though not tailor made it was absolutely comfortable and serviceable; and as my recollection serves me of my boyish impressions at that time it was very beautiful sometimes. Can we do so now? Our civilization has gone above that period; our interdependence upon one another for those things that make life not simply enjoyable but tolerable is so great that we are each absolutely dependent upon the other.

Now, these brief words illustrate to you your dependence upon the manufacturing world. What shall I say of the dependence of all of the other people upon the farmer, they who produce the things of life? In order that I may shorten what I wish to say to the minimum I will simply state this conclusion, that without the farmers, without the people who produce the food upon which the balance of the world is to live, the world would live about how long? Is it eighteen months, Bro. Brigham? Just about eighteen months and then the wheels would all have to stop and there would be a wind up of the things of this life. I do not know that I can better state the absolute dependence of the world upon those who change the bulk of things than by simply stating this fact, that without you, and without what you are to do and to produce, the next eighteen months would wind up the business of this world. The important question I wish to discuss, and to me of more importance in its economical view than what I have been stating to you, is this: We have in this wonderful country of ours—and I sometimes get a little afraid that we are going to brag about it too much, and yet when I look it over I do not see how that is possible—but in this wonderful country of ours over three thousand miles long and two thousand miles wide, with a varied climate that produces everything that the world produces, everything that the world needs to live on, a country that is still in its infancy of culture, but which possesses the ability to produce food—it is said by those who have studied the question carefully—enough to supply six hundred millions of people or almost one-half of the population of the world. We have with our increased facilities for farming, our increased production, our increased fertility, our increasing area of tillable land—we have, I say an increasing surplus of farm products that is outstripping our ability to consume, and I am not sure but that we are getting pretty near where a friend of mine living in Portsmouth found himself at one time; there were five brothers brought up away up in the New River country in West Virginia and the smallest one tipped the beam on me a little. They were not small fellows. Some one said to one of the brothers, who weighed two hundred and ninety pounds and not very fat either, "How does it happen you fellows grew so large?" "Well," he said, "we were away from the market and had no way to get anything to market and so we had to eat everything we raised." I am not sure that it will require us to increase our size or our avoirdupois to that extent but I insist that we must find somewhere somebody that will take care of and consume our surplus products. That is the question today. We have sufficient for ourselves. We have sufficient for a great many more people, but what is to become of the surplus of the years to come? Now the proportion of surplus in the last twenty-five years has been astonishing. I have in my pocket—though I shall not take the time to read it just now—a statement of fact that our increase in surplus in the last twenty-five years has been 190 per cent. greater than it was the twenty-five preceding years. I am not responsible for those figures but they come from the Department of Agriculture at Washington.

Col. Brigham: They are right then.

Mr. Wallace: Bro. Brigham says they are right. If that proportion is to continue then have you not an answer to your question as to the low prices in farm products today? You have more than you can eat and you have more than the world abroad wants. You say in answer to that, "But we have been exporting wonderfully in the last year." True. But why? It is because there has been a scarcity in the balance of the world. Out of the nineteen hundred millions of bushels of wheat produced by the world last year we produced six hundred and seventy-eight millions. There ought to have been twenty-four hundred millions produced in the world last year but we were below the average crop. In the United States we had a surplus and we had a better market for it abroad but how long will that continue? Until the first good crop comes to the other wheat producing sections of the world and then down goes your price again unless there is an additional market found somewhere. I am not a pessimist. I have no disposition to say that today we are confronting anything like a serious disaster, but I am here to say that unless we can in some way find more people to consume our farm products in the next five or ten years then the prices must go below what they are because the supply will certainly be beyond the demand. And that always makes low prices.

I have been asked to suggest some line of legislation that will better this condition in the future. What shall it be? If I were a statesman, if I understood the science of government well I might answer the question. But since I do not I must fall back on the primary principles that we were taught in the kindergarten of our farm education; first that whatever legislation may do which will produce a greater demand for our products is the legislation that we need and must have. Now I know that you cannot educate money into people's pockets. But there may be a policy of government that does foster better prices. I am not here to talk political questions and do not propose to but I simply say to you that any sort of legislation or policy of the government—state or national—that will not in itself foster such industries of this country as will produce more mouths to feed is not in the best interests of the country. It does not matter whether it is national or state, such care should be taken of the resources of the country in a manufacturing line as will give to it the greatest number of people to feed. But that is not all of it. I question in looking over this entire field whether or not it is possible for even the other industries aside from agriculture in this country to produce a sufficient market for what our farms will and must produce as a surplus in the future. So then whatever policy we may have which does not find for us a market abroad for the surplus which we produce is a poor policy for this government. Just to illustrate what I mean. Any kind of foreign relations that will not sell for us a bushel of wheat or a barrel of pork or a barrel of beef, that will not make a market, if in no other way then in exchange for what we must get from abroad, is a bad policy for this or any other government. I am not marking out any line of legislation except to say that the markets of the world are to be open for us, they are to be ours; but they are to be markets that we can compete with and I believe today that we can compete in farm products with any market on earth with the facilities we have for producing.

I have been wondering very recently since these strange events have been occurring with reference to our foreign complications, our late disturbances with Spain and what followed it, I have been wondering how much of that all-wise, over-ruling administration above that sends the rain and the sunshine upon the evil and the good alike there has been in this matter as a sort of outlet for our future surplus products? Now to illustrate. I was met a few months ago by a man who said to me, "I am very much afraid we are going to get into trouble here because I am very much opposed to expansion; it is anti-American. The fathers of the constitution and the fathers of the government never intended it," and he said "beware and never violate Washington's Farewell Address." That set me to studying Washington's Farewell Address and the circumstances surrounding it, and I have about deduced this from that: When the Pilgrim fathers first came to this country they had no idea of building an empire; they wanted to get away from foreign oppression. They came over here and established a new civilization which up to that time was unknown in the history of the world. They went along with this civilization until oppression from abroad came upon them again and they found that they must submit to what they fled from or fight, and they fought. The result was that at the end of seven years they had built an empire upon the civilization that they came to establish and that empire constituted thirteen colonies along the Atlantic Belt. We had English possessions on the north and Spanish possessions and French possessions on the south and west and the great Northwest Territory lying between undecided as to where it should fall, and when Washington made that farewell address he simply had reference to the thirteen colonies and could have had reference to nothing more. Well the question of who should own the Northwest Territory—this great Mississippi Valley—came up for settlement and in our Louisiana purchase of 1803—I may not get my dates correct, but I think I have them approximately correct—we partly settled that question. Then came the war of 1812, which was a final settlement of the territorial questions in this country so far as France and Spain were concerned. Another expansion of territory. And then the next step was our Texas acquisition and our Southern California acquisition until we found ourselves in possession of a great broad country which the fathers did not dream of when they began their conflict. We have gone on and on. We purchased Alaska. I have not a question in my mind that if the Alaskan purchase had been submitted to a vote of the American people they would almost unanimously have voted it down, but we got it. Now has come our Hawaiian acquisition. So we have to change now our geography a little. Heretofore we have been proud that we belonged to the United States of America; and we have held to that belief perhaps about as sacredly as anything we had, but now if we were to write to a friend at Honolulu you could address him at "Honolulu, Hawaii, United States," but not of America, but the "United States of the World" (applause). We have stepped out of the narrow limits in which we have been living and we got out of them without knowing how. It looks to me as if there has been a strange leading of Providence in this matter. The next thing we find ourselves in the conflict with Spain with the declaration solemnly made that it was not for the purpose of gain. We went into the conflict in the name of humanity to compel Spain to stop whipping her little boy and we went over there and we had a little tilt with them, short and sweet, but it was soon over; and what happened? We found ourselves with a great big country on our hands that we had not gone after. It is here. We have got it, and I am just a little amazed at these people who are talking about expansion and non-expansion. I am reminded by our situation of Pat, who had his twin boys on board a train traveling one day. They were mischievous little fellows and they kept Pat in hot water caring for them. Finally a friend said, "Pat, how much would you take for them?" Pat said, "I would not take ten million dollars apiece for them, but I pledge you the honor of a gentleman that I would not give ten cents apiece for two more just like them" (laughter). I have no doubt that if another baby came into Pat's home that he dare not throw it out naked and starving because the neighbors would make a fuss about it and for decency's sake if for nothing else he would take care of it. And I suppose in coddling and nursing it Pat would have fallen as much in love with it as he had with the other two. That is just the trouble with us. The baby has been born. We did not want it. We did not intend to have it, but it is here and it is on our hands and somehow we have to take care of it. We cannot throw it out in the cold, in its nakedness, to be abused; for the balance of the world would raise a fuss about it. That is where we stand today. We are responsible for its bringing up and for its education. Whether we will or will not the child is on our hands and we must take care of it. I will simply say this, in application of what I have said, that it is not a question of whether we want to expand or don't want to expand. That is not the question. The question for us to decide it, "will we take care of the baby?" and after it is grown up and is educated and ready to do business for itself then it will become a question for us to decide. If we want it we can keep it. If we do not want to have it in our family we will allow the other fellow to have it, provided the other fellow satisfies us precisely. I think that is about where we stand and so I guess we would better be rid of all this furor about expansion of territory. It is no time to expand. I will tell you what I think I see in the future. I think I see all this South American continent opening up to a great foreign trade that will consume our surplus products perhaps. At least there is a little light in the future down in that direction. We need not look much to Europe as consumers of our products, because they have other means of support. There is the great Asiatic empire, which must be civilized, which will be civilized, and as they are civilized, they will want the productions of civilization. May it not be—I am not here to say that it is, but may it not be—that the Lord Almighty is now opening out for the factory and the farm and for the commercial world the outlet which will be absolutely necessary for us in the future?

All I want to say about legislation of a national character is that we should not throw aside the gifts that providence has placed within our reach. May it not be that in the future your great carrying trade will be toward the occident? May it not be that your great markets instead of going eastward will be westward and whatever policy we have should be along the line of fostering that which will consume the surplus products of this country in foreign trade?

I am not sure but there is another thing which I simply want to allude to very briefly. I shall not stop to talk about the needs of our local legislation in the reduction of taxes and all that kind of thing. I will leave that for you to discuss in your own minds, but let me say this; that it looks to me as though I can see the hand of the Great God of the Universe in shaping the destiny of this nation. It is today a certain fact that this civilization—I mean the civilization of United States of America—this civilization of the American continent, I will say, that eminated from the bleak New Egnland shores, is the civilization by which the Lord Almighty intends to redeem this world from ignorance, oppression and crime. If so, then why should we attempt to bottle it up in this little space of two thousand miles wide and three thousand miles long? If God Almighty wants to carry it away into the orient and settle it down upon one of those islands over there beside the effete civilization of Asia, would it not aid more in the redemption of the down-trodden and ignorant of that country than one hundred years of the best efforts of the missionary societies of the world? It seems to me that the Lord Almighty is just opening this world to the civilization that He has started here, which evidently He intended shall fill the whole earth as was the stone cut out of the mountain. I thank you, gentlemen (applause).

Hon. J. L. Carpenter, Chairman of the Committee on Resolutions, then submitted the following

REPORT OF COMMITTEE ON RESOLUTIONS.

Mr. President:

Your Committee on Resolutions, to whom was referred the following, having had the same under consideration, report to this meeting and recommend the adoption of the same, and also recommend that the Secretary of this State Board of Agriculture forward a copy of these resolutions to each of our United States Senators and members of Congress:

No. 1.

WHEREAS, Ninety per cent. of the imports and exports of the United States is carried in foreign ships, which annually receive from the people of the United States a sum estimated at $200,000,000, which is taken out of the country in gold or its equivalent, and contributes to the employment of aliens abroad, while at the same time depriving our own people of the employment that sum would constantly give if it were retained in the United States, and

WHEREAS, A bill has been introduced in the Senate of the United States (No. 5,024) by Hon. M. A. Hanna, and in the House of Representatives (No. 11, 312) by Hon. S. E. Payne, the purpose of which is to restore to American ships a fair share of our foreign carrying, to the end that the money so expended may be retained in the United States, giving employment upon our farms, our mines, our forests, our factories, in our shipyards and on board the ships, to our own people; therefore, be it.

Resolved, That the Ohio State Board of Agriculture favors the adoption of Senate Bill No. 5,024 and House Bill No. 11,312, which are identical, at the present session of Congress, and respectfully requests that each of the Senators and the Representative from this district, in Congress, do their utmost to secure the passage of these bills, in the interest of the people of the entire United States and for the more adequate defense of the nation.

No. 2.

Resolved, By this Board, that the farmers of Ohio will aid the Food and Dairy Commissioner in the execution and enforcement of all laws now on the statute books, against the adulteration of food products, and request and insist upon the earnest and vigorous prosecution of all offenders of these statutes.

No. 3.

Resolved, 1. That European discriminations against the products of American agriculture under the guise of governmental inspection, ostensibly for legitimate purposes, but in fact as an excuse to exclude American products, are so unwarranted, so unjust and so injurious to our export trade, that it is the duty of Congress to take prompt and efficient measures to cure this growing evil.

2. That retaliatory legislation, providing merely for the inspection by our government of imported goods is not only undignified and illogical, but wholly inadequate to protect American producers.

3. That Congress should at once, either by direct legislative act or by conferring adequate power upon the executive department, place such restrictions upon the import trade of offending nations as will compel them to accord fair treatment to American products.

J. L. CARPENTER,
F. A. DERTHICK,
W. F. HUFFORD,
Committee.

At the conclusion of the reading of the report of the Committee on Resolutions, on motion, duly seconded, the same was unanimously adopted.

The Board then recessed until 7:30 P. M.

EVENING SESSION.

THURSDAY, January 12, 1899.

After the Meeting was called to order by President Bordwell, the Chair announced: The next thing in order is the election of five members of the State Board of Agriculture. I will appoint as tellers, J. G. Russell, of Morrow County, and George W. Carey, of Warren County. There are five members to be elected, two of them to serve for a term of five years, two of them for a term of four years, and one for a term of three years. How shall we elect them?

Dr. W. K. Coleman, of Adams County: I move, Mr. Chairman, that the two candidates receiving the highest vote shall be declared elected for the term of five years; the two candidates receiving the next highest vote shall be declared elected for the term of four years; and the candidate receiving the next highest vote declared elected for the term of three years, provided that each candidate receive a majority of all the votes cast.

Motion seconded by Mr. C. H. Ganson, of Champaign County.

Secretary Miller: I want to call your attention, gentlemen, to the fact that possibly that might not be just what you would expect. There are five candidates to be elected out of the twelve nominees. Suppose you should have one elected on the first ballot by a bare majority; then the question would arise should he or should he not be a five-year term man:

Dr. Coleman: Surely; that is the meaning of my motion.

Secretary Miller: But suppose upon the second or third ballot, or upon the tenth ballot, when they get down to a fewer number of candidates some one of the candidates receives a larger vote than the highest candidate received upon the first ballot then the question might arise, who under the provisions of this motion should be declared elected to the long term.

Dr. Coleman: Of course the meaning of my motion is that the first candidates receiving the highest number of votes, provided the number received is a majority of all the votes cast, shall be declared elected and each ballot is to be taken as a complete ballot by itself.

Dr. Coleman's motion then carried unanimously.

Mr. G. C. Mastick, of Cuyahoga County: I rise for information. Are proxies allowed to be voted?

President Bordwell: Yes, where they are duly authorized.

Mr. Mastick: I have been through the mill in our county in a matter somewhat similar to this and I know what the result is and what trouble it may lead to. Therefore I move that no proxies be allowed to be voted in this Meeting.

Mr. J. McLain Smith, of Montgomery County: I second the motion.

Dr. Coleman: It often happens that a delegate is appointed and he is ready to come and some unforeseen accident happens which makes it impossible for him to come. Such a thing has happened with me four or five times. In those instances I have sent my proxy to the Assistant Secretary with instructions to vote it. I am willing to trust it to him and willing to abide by his vote. If I were not I would not have sent it to him. I think that the vote under those circumstances ought to be counted, for we are certainly entitled to a vote in the Meeting. I therefore oppose the motion.

Mr. Mastick: In making that motion I do not wish to rule out any one who is here representing a local society which is an energetic, live association. I have no objection to such a representative voting. But the object of my motion is to prevent written proxies sent to some outsider to vote.

A delegate: I understand that is the very reason given by the gentleman to my right. He has illustrated his position by saying that he was ready four times to come but that some unforeseen accident prevented it. There does not seem to be any lobby here for the purpose of influencing us and I think where proxies have been sent in the regular course of business that those proxies should be observed by this Meeting and they should be allowed representation by granting them the privilege of voting. I do not suppose there are many proxies here and the adoption of this rule would deprive those who have a right to be represented and in fact are represented by proxies from casting a vote.

Mr. C. W. Halfhill, of Mercer County: I think the motion should be adopted. If this gentleman is here why can't he represent his own county?

Dr. Coleman: I was referring to previous years when I had intended to come but was prevented at the last moment. I am here tonight and intend to remain and vote. But I used that as an illustration merely of former occasions when it was absolutely impossible for me to get here. For eleven years I have been a representative from our society and this is my first visit here.

Mr. Halfhill: I think the matter of voting proxies is illegal anyhow. It is the opinion of the best attorneys that a man who has been sent as a delegate cannot delegate his power to anybody else so far as casting votes is concerned. There is an express statute against any such course in political conventions and wherever the statute makes any express provision on the subject it holds that proxies are not legal. I can remember times when there were eight or ten proxies voted here by one or two persons and in some instances the result has been changed by the vote of those proxies. I hope the motion will prevail.

Mr. A. E. Schaffer, of Auglaize County: I think the placing of seven or eight proxies in the hands of one man to vote is not a proper course to pursue and I am most heartily in favor of the motion.

President Bordwell: I do not think there was ever a proxy voted here but what was a legally authorized proxy.

Mr. J. McLain Smith: Before the question is put to the house I would like to ask if I understand the motion to be that any one who is appointed by the society itself to represent it cannot delegate his authority? Is that the understanding? If it is intended to cut out the vote of any one whom the society itself chooses to authorize to cast the vote of that society then I will certainly withdraw my second to the motion and vote against it, for it was not with that understanding that I seconded the motion.

A delegate: I understand the gentleman's motion to be to prohibit the voting of proxies if they are attempted to be voted by anybody outside of the local organization, but any member of the local society can come here and cast a vote which has been duly authorized. The object of the motion as I understand it is to prevent a society from delegating its power to some person outside of the county who is not entitled to be a delegate.

The motion was declared to be carried by a rising vote of twenty-eight to twenty.

Mr. C. W. Halfhill, of Mercer County: Mr. President, I move you that in calling the roll the same order be observed that was observed this morning and that one county be called at a time and one county vote at a time. If there are four or five counties called there is so much confusion that it would be impossible for anybody to tell whether those who were not delegates were voting or not. I therefore move you that the roll of counties be called and that the vote be received one vote at a time.

The motion was duly seconded and carried.

Secretary Miller: I will explain that the printed tickets have been distributed throughout the meeting containing the names of the twelve gentlemen who were placed in nomination this morning. Each delegate is entitled to five votes, or to vote for five individuals and he may do so by striking off the names of seven men for whom he does not choose to vote, thus leaving the five for whom he does wish to vote. A ticket containing more than five names will not be a valid ticket and cannot be counted.

The Meeting then proceeded to ballot for five members of the State Board of Agriculture and when Crawford County was called, Mr. J. H. Pringle, of Cardington, O., said: Just before the evening session the delegate from Crawford County had to go home. He fixed his ticket and gave it to me. I hold it in my hand just as he gave it to me. I can prove these facts by gentlemen in this room, but under this ruling I understand I am not entitled to vote it and that Crawford County is prevented from casting her vote in this election. I think it is all wrong. I will not try to vote it unless the Meeting gives me permission.

Mr. C. H. Ganson, of Champaign County: I move that the gentleman be allowed to vote the ticket.

Mr. C. G. Mastick, of Cuyahoga County: I second that motion.

A. delegate: I rise to a point of order. That would be a violation of the rule just adopted and it opens up the whole question, which we cannot afford to do. If this gentleman is allowed to vote this ballot anybody else can do the same thing and we might as well not have adopted the motion a few moments ago.

The motion was then voted upon by a rising vote and declared by the Chair to be lost.

The ballots cast by the fifty-five delegates present resulted in the election of Messrs. J. P. Stuckey, of Van Wert County, and B. P. Baldwin, of Mahoning County, for the term of five years; D. J. Green, of Noble County, and Samuel Taylor, of Franklin County, for the term of four years; and C. Bordwell, of Clermont County, for the term of three years.

No further business appearing, on motion, duly seconded, the fifty-fourth annual meeting of the Ohio State Board of Agriculture then adjourned *sine die*.

NINTH ANNUAL REPORT

OF

FARMERS' INSTITUTES

HELD IN OHIO IN 1898-99,

UNDER THE AUSPICES OF THE

Ohio State Board of Agriculture

AND

PROCEEDINGS OF THE STATE FARMERS' INSTITUTE,
HELD IN COLUMBUS, JANUARY
10 AND 11, 1899.

NINTH ANNUAL REPORT

OF

FARMERS' INSTITUTES

Held in Ohio During the Winter of 1898-1899.

The Farmers' Institute season of 1898-1899 began Monday, November 28, 1898, and closed Saturday, March 4, 1899, making fourteen weeks of institute work with six or seven circuits in operation all of the time, except one week in January, when the State Farmers' Institute was held in Columbus, and but one county institute was held, the one at Pleasant Corners, Franklin county, which was held after the close of the State Institute. There were held during the institute season under the immediate auspices of the State Board of Agriculture one State Farmers' Institute and two hundred and fifty regular County Institutes. Many independent institutes have also been held, of which twenty made formal reports.

The Farmers' Institutes in the State continue to advance in the amount of valuable work done and interest shown by the several members. While the attendance has not been as large in many cases as formerly, the reason is to be found in the severe and changeable winter and the unusual prevalence of epidemic diseases, which have affected all portions of the State. Some of the lecturers employed by the State Board of Agriculture have been compelled to cancel several appointments from the latter cause, but, in most cases, the Board has been enabled to supply their places by making exchanges or otherwise.

The State Institute held in the city of Columbus, January 10-11 last, had a large attendance and much interest was manifested by all. The addresses were attentively heard and drew out instructive discussion. The Board feels greatly pleased at the uniform success of the State Institute and believes that much good will result from its meetings.

Petitions praying for the recognition of additional institutes to be held under the management of the Board are still being received by the Secretary and, while it would seem that the limit has nearly been reached, there are a few counties where one or two more societies can safely be established. In counties where there are many more societies than the per capita allowance can be relied upon to provide for, some method of rotation may have to be adopted. Indeed, such a plan is already in operation in several counties and it appears to be an admirable arrangement. Present indications are that there will be a larger number of institutes established for the coming season than ever before.

The Board publishes herewith a detailed statement of receipts under the provisions of the "Law governing Farmers' Institute Societies in Ohio," in accordance with instructions contained in the law; also papers read at several institutes embracing subjects of interest to farmers, stock raisers, horticulturists and all interested in agricultural pursuits. A special request sent out for papers resulted in so large a number of valuable articles being received that they could not all be published in this pamphlet for want of room.

The Board feels much gratified at the increased success of the farmers' institute work and the ready and cordial co-operation of the various local societies and believes that the coming season will be attended with a still more encouraging degree of success.

By direction of the State Board of Agriculture.

WELLS W. MILLER, *Secretary.*

Columbus, O., April 10, 1899.

FINANCIAL STATEMENT.

The following statement shows the receipts and disbursements of the Ohio State Board of Agriculture on account of Farmers' Institutes, for the season of 1898-1899, held under the law passed April 26, 1890, and amended April 27, 1896.

RECEIPTS.

Amounts collected from the counties on the basis of three mills per capita, being the State Board's proportion of the six mills per capita allowance provided by the law for the maintenance and support of County Institute societies in Ohio:

Adams County	$78 27
Allen County	121 93
Ashland County	66 66
Ashtabula County	125 00
Athens County	105 58
Auglaize County	84 30
Belmont County	125 00
Brown County	89 69
Butler County	125 00
Carroll County	52 69
Champaign County	80 94
Clark County	125 00
Clermont County	100 65
Clinton County	72 72
Columbiana County	125 00
Coshocton County	80 10
Crawford County	95 78
Cuyahoga County	125 00
Darke County	125 00
Defiance County	77 30
Delaware County	81 56
Erie County	106 38
Fairfield County	101 81
Fayette County	66 92
Franklin County	125 00
Fulton County	66 06
Gallia County	81 01
Geauga County	40 46
Greene County	89 46
Guernsey County	85 93
Hamilton County	125 00
Hancock County	125 00
Hardin County	86 84
Harrison County	62 49
Henry County	75 24
Highland County	87 14
Hocking County	67 97
Holmes County	63 41
Huron County	95 84

Jackson County	$85 22
Jefferson County	118 24
Knox County	82 80
Lake County	54 70
Lawrence County	118 66
Licking County	125 00
Logan County	82 15
Lorain County	120 88
Lucas County	125 00
Madison County	60 17
Mahoning County	125 00
Marion County	74 18
Medina County	65 22
Meigs County, allowance $89.43, interest .89	90 32
Mercer County	81 66
Miami County	119 26
Monroe County	75 52
Montgomery County	125 00
Morgan County	57 42
Morrow County	54 36
Muskingum County	125 00
Noble County	62 25
Ottawa County	65 92
Paulding County	77 79
Perry County	93 45
Pickaway County	80 87
Pike County	52 44
Portage County	83 60
Preble County	70 26
Putnam County	90 56
Richland County	114 21
Ross County	118 36
Sandusky County	91 85
Scioto County	106 13
Seneca County	122 60
Shelby County	74 12
Stark County	125 00
Summit County	125 00
Trumbull County	125 00
Tuscarawas County	125 00
Union County	68 58
Van Wert County	89 01
Vinton County	48 13
Warren County	76 40
Washington County	125 00
Wayne County	117 01
Williams County	74 69
Wood County	125 00
Wyandot County	65 16
Total	$8,174 25

DISBURSEMENTS.

For per diem and expense of lecturers, as follows:

Begg, John, Columbus Grove, five weeks and two days......	$265 65
Bradfute, O. E., Cedarville, four weeks......................	201 35
Cowden, W. M., Quaker City, six weeks....................	295 20
Derthick, F. A., Mantua, ten weeks and two days...........	473 34
Dobie, J. Al., Gutman, four weeks..........................	204 68
Farnsworth, W. W., Waterville, eight weeks................	375 55
Freeman, C. M., Rex, five weeks............................	260 03
Gibbs, W. D., Columbus, (no per diem) four weeks..........	94 65
Gould, John, Aurora Station, five weeks....................	239 95
Green, W. J., Wooster, (no per diem) one week.............	13 55
Greene, J. F., Sandusky, nine weeks........................	434 50
Hickman, J. F., Wooster, (no per diem) one week..........	19 85
Houlette, W. R., Columbiana, two weeks....................	89 40
Housekeeper, G. C., Bowling Green, four weeks.............	197 60
Kellerman, W. A., Columbus, (no per diem) three weeks......	55 00
Lawrence, G. E., Marion, five weeks........................	244 91
Laylin, T. C., Norwalk, six weeks..........................	273 86
Lazenby, W. R., Columbus, (no per diem) three weeks......	41 65
Lehman, J. A., Savannah, two weeks........................	86 90
McLaughlin, S. K., Hurford, four weeks....................	217 55
Miller, H. P., Sunbury, four weeks and four days..........	181 95
Miller, T. J., Leipsic, four weeks..........................	188 35
Roudebush, J. L., Stonelick, six weeks.....................	283 92
Scott, G. E., Mount Pleasant, four weeks..................	218 31
Selby, A. D., Wooster, (no per diem) one week.............	20 60
Shawver, J. L., Bellefontaine, six weeks....................	296 55
Shirer, A., Dayton, four weeks............................	196 15
Thorne, C. E., Wooster, (no per diem) one week............	13 25
Todd, M. I., Wakeman, four weeks..........................	216 76
Todd, S. H., Wakeman, five weeks and one day.............	252 00
Trumbo, E., Cranberry, three weeks........................	125 70
Turner, E. W., Newton Falls, two weeks....................	85 95
Wallace, R. H., Chillicothe, ten weeks and two days........	500 78
Webster, F. M., Wooster, (no per diem) one week...........	24 40
White, A. L., Norwich, two weeks and four days............	136 00
White, D. S., Columbus, (no per diem) two weeks...........	23 80
Williams, C. G., Gustavus, eight weeks.....................	414 71
Wing, J. E., Mechanicsburg, five weeks.....................	265 50
Total	$7,529 85

MISCELLANEOUS.

Printing and sundry expenses for State Farmers' Institute, held at Columbus January 10–11, etc..........................	$64 50
On account of preparing report for printer, job printing, postage, express, etc....................................	579 90
Total	$8,174 25

FARMERS' INSTITUTES HELD IN OHIO DURING THE SEASON BEGINNING NOVEMBER 28, 1898, AND ENDING MARCH 4, 1899.

Counties.	Population.	Institutes held.		Attendance Reported.	Local Expense Reported by the Society.	Per Capita Allowance to Institute Societies under the Institute Law.
		Where.	When.			
Adams	26,093	Cherryfork	December 7-8	450	$31 50	$78 27
		Peebles	January 23-24	342	38 60	
Allen	40,644	Spencerville	November 30-December 1	150	15 30	121 93
		Bluffton	December 2-3	650	22 00	
		Beaverdam	February 6-7	400	16 85	
		Harrod	Februaty 17-18	500	31 00	
Ashland	22,223	Loudonville	December 5-6	134	27 25	66 66
		Savannah	December 23-24	400	33 33	
Ashtabula	43,655	Andover	December 12-13	450	30 80	125 00
		Geneva	January 16-17	250	40 50	
		Ashtabula	January 30-31	180	39 10	
Athens	35,194	Coolville	November 30-December 1	250	19 67	105 58
		Amesville	December 14-15	184	27 39	
		Albany	December 30-31	275	25 87	
		Athens	February 27-28	350	26 36	
Auglaize	28,100	Kossuth	Februay 8-9	150	28 10	84 30
		Cridersville	February 27-28	300	47 60	
		Uniopolis	March 3-4	250	28 10	
Belmont	57,413	Colerain	December 7-8	450	55 35	125 00
		Belmont	January 25-26	300	39 80	
		Barnesville	February 10-11	300	37 50	
Brown	29,899	Hamersville	December 9-10	250	22 35	89 69
		Decatur	January 25-26	400	29 89	
		Union Plains	February 24-25	309	30 00	
Butler	48,597	Monroe	December 30-31	219	30 68	125 00
		Reily	January 16-17	415	38 05	
		Oxford	February 3-4	400	27 90	
		Collinsville	March 3-4	1000	31 25	
Carroll	17,566	Carrollton	January 2-3	700	52 69	52 69

Champaign	26,980	Westville	December 21-22	400	30 00	80 94
		Mechanicsburg	February 8-9	150	33 10	....
		North Lewisburg	February 17-18	425	25 00	....
Clark	52,277	Pitchin	December 21-22	300	22 00	125 00
		South Charleston	January 18-19	200	21 50	....
		Tremont City	February 3-4	150	19 65	....
		Vienna Crossroads	February 15-16	250	23 00	....
Clermont	33,553	Amelia	December 12-13	300	25 50	100 65
		Mulberry	January 4-5	300	25 16	....
		Bethel	January 27-28	750	37 50	....
		Williamsburg	February 17-18	400	25 00	....
Clinton	24,240	Sabina	December 26-27	350	36 20	72 72
		Wilmington	February 27-28	650	36 36	....
Columbiana	59,029	Lisbon	December 5-6	300	53 00	125 00
		New Waterford	December 28-29	500	31 65	....
		Columbiana	February 15-16	450	43 30	....
Coshocton	26,703	Plainfield	November 30-December 1	250	20 65	80 10
		New Guilford	January 27-28	200	21 50	....
		Keene	February 22-23	300	19 54	....
Crawford	31,927	Bucyrus	December 7-8	600	31 92	95 78
		Sulphur Springs	December 21-22	250	26 65	....
		Galion	February 1-2	600	31 00	....
Cuyahoga	309,970	Dover	December 16-17	600	25 00	125 00
		Chagrin Falls	January 20-21	325	31 25	....
		Strongsville	January 23-24	350	23 74	....
		Euclid	February 3-4	300	45 32	....
Darke	42,961	Greenville	December 14-15	200	23 65	125 00
		Arcanum	January 25-26	550	41 66	....
		Versailles	January 27-28	400	32 85	....
Defiance	25,769	Hicksville	December 19-20	260	37 58	77 30
		Defiance	January 4-5	300	38 65	....
Delaware	27,189	Sunbury	November 28-29	250	37 75	81 56
		Delaware	December 12-13	188	40 78	....
Erie	35,462	Milan	December 23-24	200	35 46	106 38
		Castalia	January 16-17	200	35 46	....
		Berlin Heights	February 13-14	250	35 46	....
Fairfield	33,939	Amanda	December 19-20	600	33 93	101 81
		Pleasantville	January 16-17	500	34 37	....
		Carroll	February 1-2	300	32 86	....
Fayette	22,309	New Martinsburg	December 23-24	300	19 25	66 92
		Bloomingburg	December 28-29	250	21 50	....
		Goodhope	February 20-21	250	26 35	....
Franklin	124,087	Canal Winchester	December 26-27	500	37 70	125 00
		Pleasant Corners	January 13-14	250	27 38	....
		Westerville	February 8-9	150	27 45	....
Fulton	22,023	Wauseon	December 14-15	200	26 15	66 06
		Delta	January 25-26	500	26 30	....
Gallia	27,005	Thurman	December 2-3	375	17 50	81 01
		Addison	January 25-26	300	11 85	....
Geauga	13,489	Chardon	January 18-19	400	40 46	40 46
Greene	29,820	Xenia	December 19-20	400	75 00	89 46
		Jamestown	January 20-21	600	31 72	....
		Cedarville	February 13-14	800	45 00	....

FARMERS' INSTITUTES ETC.—Continued.

Counties.	Population.	Institutes held.		Attendance Reported.	Local Expense Reported by the Society.	Per Capita Allowance to Institute Societies under the Institute Law.
		Where.	When.			
Guernsey	28,645	Cambridge	December 5-6	200	$36 50	$85 93
		Antrim	January 6-7	200	36 25	....
Hamilton	374,573	Newtown	December 14-15	325	31 25	125 00
		Mt. Healthy	January 2-3	325	31 25	....
		Cleves	January 30-31	500	31 25	....
		Blueash	February 1-2	400	31 25	....
Hancock	42,563	Arcadia	December 5-6	300	31 25	125 00
		McComb	December 28-29	500	40 52	....
		Mt. Blanchard	February 15-16	500	31 25	....
		Benton Ridge	March 1-2	600	31 50	....
Hardin	28,939	Ada	January 4-5	460	37 60	86 81
		Forest	March 3-4	300	39 80	....
Harrison	20,830	Freeport	January 23-24	400	50 00	62 49
		Cadiz	February 6-7	400	135 38	....
Henry	25,080	Florida	December 21-22	300	25 08	75 24
		Deshler	January 6-7	250	26 00	....
		Malinta	February 1-2	400	25 08	....
Highland	29,048	Mowrystown	January 6-7	400	29 04	87 14
		Hillsboro	February 15-16	300	24 50	....
		*Rainsboro	February 22-23	500	29 00	....
Hocking	22,658	Laurelville	February 15-16	300	39 48	67 97
		Logan	February 24-25	500	28 10	....
Holmes	21,139	Killbuck	December 2-3	400	24 05	63 41
		Holmesville	January 25-26	250	31 70	....
Huron	31,949	New London	December 9-10	400	27 20	95 84
		Wakeman	December 21-22	250	21 70	....
		Monroeville	January 27-28	250	26 90	....
Jackson	28,408	Jackson	December 28-29	200	7 25	85 22
		Camba	January 23-24	150	18 00	....
Jefferson	39,415	Smithfield	December 9-10	300	90 10	118 24
		Richmond	February 3-4	700	54 00	....
		Mt. Pleasant	February 8-9	250	44 70	....

Knox	27.600	Centerburg	December 28-29	300	27 45	82 80
		Danville	February 24-25	500	26 50	
		Fredericktown	March 3-4	300	26 50	
Lake	18,235	Madison	December 14-15	300	27 35	54 70
		Painesville	February 1-2-3	500	61 35	
Lawrence	39,556	Pomaria	November 28-29	120	13 38	118 66
		Burlington	January 16-17	150	10 43	
Licking	43,279	Granville	November 3.-December 1	300	31 25	125 00
		Utica	December 30-31	150	31 22	
		Brownsville	January 30-31	300	31 25	
		Jersey	February 10-11	300	45 38	
Logan	27,386	Bellefontaine	December 23-24	350	27 38	82 15
		West Mansfield	January 2-3	400	27 38	
		Degraff	February 1-2	500	27 35	
Lorain	40,295	Brownhelm	December 19-20	296	39 50	120 88
		North Ridgeville	January 25-26	336	38 60	
		Copopa	February 6-7	400	30 28	
Lucas	102,296	Java	December 12-13	200	18 49	125 00
		Waterville	January 6-7	200	35 15	
		Sylvania	January 23-24	300	35 45	
		Maumee	February 17-18	300	35 44	
Madison	20,057	London	December 23-24	150	16 95	60 17
		West Jefferson	January 16-17	440	30 20	
Mahoning	55,979	North Lima	December 7-8	400	29 00	125 00
		Canfield	December 26-27	365	30 50	
		North Jackson	January 16-17	200	36 00	
		Berlin Center	January 30-31	175	28 95	
Marion	24,727	Marion	December 9-10	300	24 00	74 18
		Waldo	February 6-7	300	22 13	
		Caledonia	February 22-23	350	22 71	
Medina	21,743	Whittlesey	December 19-20	100	21 40	65 22
		Poe	January 4-5	223	18 06	
		Malletcreek	February 8-9	125	15 00	
Meigs	29,813	Dyesville	December 2-3	500	27 35	89 43
		Chester	January 27-28	250	25 00	
		Racine	March 3-4	300	26 40	
Mercer	27,220	Fort Recovery	December 12-13	375	21 75	81 66
		Wabash	February 10-11	222	19 50	
		Mendon	March 1-2	80	12 70	
Miami	39,754	Covington	December 19-20	250	39 10	119 26
		Piqua	February 10-11	350	47 00	
		West Charleston	February 17-18	500	39 90	
Monroe	25,175	Woodsfield	December 5-6	50	28 00	75 52
		Beallsville	January 27-28	500	37 55	
Montgomery	100,852	West Carrollton	December 28-29	600	31 25	125 00
		Germantown	January 20-21	400	31 25	
		Vandalia	January 23-24	300	31 25	
		Trotwood	February 8-9	265	39 25	
Morgan	19,143	Triadelphia	December 12-13	225	28 71	57 42
		Chesterhill	February 22-23	500	24 63	
Morow	18,120	Iberia	December 14-15	100	27 18	54 36
		Sparta	February 3-4	250	24 50	
Muskingum	51,210	Adamsville	December 2-3	500	31 25	125 00
		Chandlersville	December 9-10	520	40 38	
		Fultonham	January 18-19	250	37 06	
		Norwich	February 22-23	350	45 40	

FARMERS' INSTITUTES ETC.—Concluded.

Counties.	Population.	Institutes held.		Attendance Reported.	Local Expense Reported by the Society.	Per Capita Allowance to Institute Societies under the Institute Law.
		Where.	When.			
Noble	20,753	Caldwell	December 7-8	150	$31 12	$62 25
		Summerfield	February 20-21	450	41 16	
Ottawa	21,974	Oakharbor	January 4-5	150	30 96	65 92
		Gypsum	February 15-16	350	28 59	
Paulding	25,932	Antwerp	January 2-3	200	23 55	77 79
		Payne	January 30-31	300	25 78	
		Oakwood	February 24-25	275	25 93	
Perry	31,151	Rehoboth	December 16-17	550	31 15	93 45
		Sayre	January 20-21	300	31 15	
		Mt. Perry	February 24-25	500	31 00	
Pickaway	26,959	Ashville	December 30-31	700	27 00	80 87
		Tarlton	February 3-4	250	30 00	
		Williamsport	February 17-18	400	28 15	
Pike	17,482	Idaho	December 26-27	250	12 00	52 44
		Piketon	January 20-21	270	16 85	
Portage	27,868	Mantua Station	November 28-29	300	20 80	83 60
		Windham	January 20-21	350	20 70	
		Randolph	February 13-14	291	14 21	
		Edinburg	March 1-2	250	20 90	
Preble	23,421	New Paris	December 16-17	500	36 60	70 26
		Camden	January 18-19	500	23 43	
		Lewisburg	February 10-11	400	30 00	
Putnam	30,188	Continental	December 23-24	500	30 60	90 56
		Ottawa	February 3-4	600	30 18	
		Leipsic	February 22-23	500	42 36	
Richland	38,072	Lexington	December 16-17	400	21 30	114 21
		Lucas	January 30-31	215	20 00	
		Adario	February 20-21	350	28 55	
		Butler	March 1-2	425	16 77	
Ross	39,454	Kingston	December 21-22	250	40 05	118 36
		Frankfort	February 13-14	300	45 30	

Sandusky	30,617	Fremont	January 2-3	800	65 00	91 85
		Clyde	January 18-19	800	43 55	
Scioto	35,377	Haverhill	November 30-December 1	275	22 50	106 13
		Mt. Joy	December 5-6	125	18 57	
		Scioto	January 18-19	212	17 05	
Seneca	40,869	Republic	December 7-8	320	35 86	122 60
		Greenspring	December 30-31	500	39 25	
		Tiffin	January 20-21	500	50 05	
Shelby	24,707	Sidney	December 26-27	200	33 85	74 12
		Jackson Center	January 30-31	400	35 60	
Stark	84,170	Alliance	December 2-3	500	47 50	125 00
		New Berlin	December 30-31	250	26 60	
		Beach City	February 17-18	250	29 10	
		Marlboro	February 27-28	450	31 05	
Summit	54,089	North Springfield	December 23-24	275	41 66	125 00
		Osborn Corners	January 6-7	250	44 75	
		Inland	February 10-11	300	39 30	
Trumbull	42,373	Newton Falls	November 30-December 1	500	31 00	125 00
		Mecca	December 9-10	300	17 57	
		Vienna	January 18-19	425	30 75	
		Cortland	March 3-4	200	29 65	
Tuscarawas	46,618	Winfield	November 28-29	280	30 45	125 00
		Port Washington	January 4-5	275	31 21	
		Bolivar	February 1-2	233	31 25	
		New Philadelphia	February 20-21	350	31 25	
Union	22,860	Marysville	February 6-7	500	34 29	68 58
		Richwood	February 24-25	500	33 45	
Van Wert	29,671	Convoy	November 28-29	400	23 25	89 01
		Ohio City	December 30-31	300	22 07	
		Van Wert	February 27-28	200	27 95	
Vinton	16,045	New Plymouth	February 13-14	185	15 80	48 13
		Wilkesville	March 1-2	425	24 00	
Warren	25,468	Waynesville	December 16-17	300	24 95	76 40
		Franklin	February 6-7	150	31 30	
		Lebanon	March 1-2	400	28 25	
Washington	42,380	Marietta	November 28-29	50	11 00	125 00
		Watertown	February 20-21	450	47 00	
Wayne	39,005	Creston	December 21-22	400	29 25	117 01
		Lattasburg	January 2-3	525	29 00	
		Wooster	January 23-24	500	31 00	
		Shreve	February 27-28	600	29 25	
Williams	21,897	Bryan	December 16-17	250	26 40	74 69
		Montpelier	January 27-28	400	16 60	
Wood	44,392	Bowling Green	December 26-27	400	21 59	125 00
		Prairie Depot	February 13-14	450	54 30	
		Grand Rapids	February 20-21	465	42 75	
		Bloomdale	February 27-28	200	20 00	
Wyandot	21,722	Nevada	December 19-20	450	26 20	65 16
		Upper Sandusky	January 6-7	500	30 90	
Totals				87,504	$7,833 30	$8,173 36

INDEPENDENT INSTITUTES.

Counties.	Institutes held.		Attendance Reported.	Local Expenses Reported by Society.
	Where.	When.		
Ashland	Polk	January 27-28	300	$38 00
Auglaize	Buckland	March 17-18	100	15 00
Carroll	Minerva	March 17	250	30 00
Champaign	Cable	December 28-29	300	11 25
Crawford	Auburn Center	January 19-20	300	20 00
Darke	New Madison	February 24-25	300	17 50
Huron	North Fairfield	October 19-20	200	25 00
	East Townsend	February 21-22	450	28 50
Lake	Willoughby	December 14-15	200	25 00
Lorain	Rochester	February 3-4	250	13 60
Medina	Brunswick	February 22-23	300	37 75
Mercer	Neptune	February 10-11	300	28 60
	Wabash	April 8	190	6 00
Montgomery	Brookville	March 18	400	40 00
Morrow	Cardington	February 22-23	500	57 00
Muskingum	Dresden	January 9-10	350	98 30
	Frazeysburg	January 25-26	225	77 14
	New Concord	March 8-9	350	68 50
Putnam	Rimer	February 18	400	14 00
	Ottawa	March 31-April 1	300	27 75
Totals			5,965	$678 89

RECAPITULATION.

1.	Amount collected by the State Board of Agriculture from the three mills per capita tax, from the eighty-eight (88) counties of the state, in all of which institutes were held	$8,174 25
2.	Amount allowable to two hundred and fifty (250) institute societies from the three mills per capita tax, from the eighty-eight (88) counties of the state, in all of which institutes were held	$8,173 36
3.	Amount expended by the State Board of Agriculture in aid of two hundred and fifty (250) county institutes for lecturers	$7,529 85
4.	Amount expended by county societies for expenses of two hundred and fifty (250) institutes	$7,833 30
5.	Total expenses for two hundred and fifty (250) institutes	$15,363 15
6.	Average expenditure, per institute, by the State Board of Agriculture for lecturers	$30 12
7.	Average expenditure, per institute, by societies	$31 33
8.	Total average expense per institute	$61 45
9.	Total average number of persons in attendance at two hundred and fifty (250) institutes	87,504
10.	Average number of persons in attendance at each	350
11.	Number of independent institutes reported	20
12.	Expense of twenty (20) independent institutes	$678 89
13.	Average expense of independent institutes	$33 94
14.	Total average number of persons attending the twenty (20) independent institutes reported	5,965
15.	Average attendance at each of the twenty (20) independent institutes reported	298.2

Names of Lecturers and their Topics.

For the Institute Season of 1898-99.

Lecturers from Agricultural Department of the Ohio State University, Columbus, Ohio.

Prof. Wm. R. Lazenby,

HORTICULTURE AND FORESTRY.

1. Judging and Scoring Fruit. Twenty-five minutes.
2. Facts About Weeds. Twenty-five minutes.
3. Insect Enemies of the Orchard and Garden. Twenty-five minutes.
4. A Talk About Tomatoes. Twenty-five minutes.
5. Gardening Under Glass. Twenty-five minutes.
6. Does Horticulture Pay as a Vocation? Twenty-five minutes.
7. How to Make and Manage a Lawn. Twenty-five minutes.
8. Something New About Corn. Twenty-five minutes.
9. Why We Should Save the Forests. Twenty-five minutes.
10. How to Educate Yourself. Twenty-five minutes.

Prof. W. A. Kellerman,

BOTANY.

1. Prevention of Smuts and Rusts of Cereals. Forty minutes.
2. Bacteria, Their Nature and Work. Forty minutes.
3. Some Problems in Education. Fifty minutes.
4. Vegetable Parasites. Thirty minutes.
5. Vegetable Physiology. Thirty minutes.
6. How Science Helps the Farmer. Forty minutes.
7. Trees and Plants for Shade and Ornament. Twenty minutes.
8. Home Life on the Farm. Thirty minutes.

Prof. W. David Gibbs,

AGRICULTURE.

1. Origin and Nature of Soils. Twenty minutes.
2. Controlling Soil Moisture by Tillage. Twenty minutes.
3. Modern Methods in Corn Culture. Twenty minutes.
4. The Points of a Good Ear of Corn. Fifteen minutes.
5. Some Reasons for Crop Rotation. Twenty minutes.

6. Stock Foods and Feeding. Twenty minutes.
7. Judging Beef Cattle. Twenty minutes.
8. Principles of Stock Breeding. Twenty minutes.
9. Planning the Kitchen. Twenty minutes.
10. Agricultural Education at the Ohio State University. Twenty-five minutes.
11. Some Opportunities for Young People on the Farm. Thirty minutes. Night.

Prof. David S. White, Dean,

COLLEGE OF VETERINARY MEDICINE.

1. Tuberculosis and the Tuberculin Test. Thirty-five minutes.
2. The Types of Horses to Breed. Thirty-five minutes.
3. The Care of the Horse's Hoof. Forty minutes.
4. "Gid" in Sheep. Twenty-five minutes.
5. Lung and Stomach Worm Diseases in Sheep. Thirty minutes.
6. Hog Cholera and Swine Plague. Thirty-five minutes.
7. Two Usually Fatal Diseases of Farm Animals Which May Readily be Prevented. Twenty minutes.
8. Two Veterinary Instruments Which Should be on Every Farm. Fifteen minutes.
9. Tetanus (lockjaw) in Animals. Twenty-five minutes.
10. Spavin and Ringbone in the Horse. Thirty minutes.
11. How Germs Cause Disease. Twenty minutes.
12. Will the Horse Become Extinct?

Lecturers from the Ohio Agricultural Experiment Station, Wooster, Ohio.

C. E. Thorne,

DIRECTOR.

1. Soil Fertility, Its Nature and Preservation. Thirty minutes.
2. The Value of Barnyard Manure. Thirty minutes.
3. Clover as a Fertilizer and its Substitutes. Thirty minutes.
4. Commercial Fertilizers and Their Economical Use. Thirty minutes.
5. Hints to Purchasers of Commercial Fertilizers. Thirty minutes.
6. Grain Smuts, Their Cost and Prevention. Thirty minutes.
7. The Apples of Our Boyhood; Can We Produce Them Again? Thirty minutes.
8. The Outlook for Beet Sugar Production in Ohio. Thirty minutes.
9. Tuberculosis in Cattle and its Relation to the Public Health. Forty minutes.
10. What Shall We Eat? Forty minutes. Night.
11. The Farm and the School. Forty minutes. Night.
12. The Ideal Farm Home. Thirty-five minutes. Night.

W. J Green,

HORTICULTURIST.

1. Irrigation for the Garden. Twenty minutes.
2. Are Northern Grown Seeds Superior to Others? Twenty minutes.
3. Potatoes.
    a. Fertilizers. Twenty minutes.
    b. Treatment of Seed and Spraying. Twenty minutes.
    c. Varieties and Cultivation. Twenty minutes.
4. Essentials in Orchard Management.
    a. Selection of Trees and Planting. Twenty minutes.
    b. Cultivation. Twenty minutes.
    c. Spraying. Twenty minutes.
    d. Pruning and Thinning. Twenty minutes.
    e. Maintaining Fertility in Orchards. Twenty minutes.
5. The Culture of Small Fruits for Home Use. Thirty minutes.
6. The Old Apple Orchard. Thirty minutes.

J. Fremont Hickman,

AGRICULTURIST.

1. The Sugar Beet Industry for Ohio. Thirty minutes.
2. A Few Hints in Growing a Crop of Oats. Twenty-five minutes.
3. Care and Management of the Dairy Cow. Thirty minutes.
4. Hints on Commercial Fertilizers. Twenty-five minutes.
5. Preserving and Applying Manures. Thirty minutes.
6. Modern Methods in Corn Culture. Forty minutes.
7. Timely Thoughts for Boys and Girls on the Farm. Forty minutes: Night.
8. The Relative Values of Food for Stock. Thirty minutes.
9. Dehorning, Feeding and Rearing Calves. Twenty minutes.
10. Does the Farmer Need an Education? Thirty-five minutes. Night.
11. Some Points in Growing a Crop of Wheat. Thirty-five minutes.
12. Smuts of Oats and Wheat with Methods of Prevention. Twenty minutes.
13. The Silo and its Place in Agriculture. Twenty-five minutes.
14. What is the Agricultural Experiment Station doing for the Farmer? Thirty minutes.
15. Does the Health of our Cows Influence the Health in our Homes? Thirty-five minutes.

Augustine D. Selby,

BOTANIST AND CHEMIST.

1. Some Principles of Botany Which Underlie Agriculture. Twenty-five minutes.
2. Fruit Canning — Principles and Methods. Thirty minutes.
3. Science Training for Farm Life. Thirty minutes.
4. Plant Diseases: How Caused and How Prevented. Twenty-five minutes.
5. The Smuts of Grain and Their Prevention. Twenty-five minutes.
6. Diseases of the Plum and Cherry. Twenty minutes.
7. Diseases of the Peach and Spraying Peach Trees. Thirty minutes.
8. Diseases of Cucumbers, Melons and Tomatoes. Thirty minutes.
9. Some Diseases of Truck Crops—Celery, Onions, Cabbages. Twenty minutes.
10. Weeds and the Ohio Weed Law. Twenty minutes.
11. Hints to Purchasers of Commercial Fertilizers. Thirty minutes.
12. Sugar Beets and Beet Sugar for Ohio. Thirty minutes.
13. Chemistry Applied to Cookery and Diet. Thirty minutes.

F. M. Webster,

ENTOMOLOGIST.

1. The Hessian Fly and Methods of Prevention. Twenty minutes.
2. The Western Corn-Root Worm in Ohio. Twenty-five minutes.
3. Some of the Older Pests of the Corn Field. Twenty minutes.
4. Some Insect Enemies of Clover. Twenty minutes.
5. How to Deal with Insect Pests of the Orchard. Twenty minutes.
6. Some Little Known Wheat Insects. Twenty minutes.
7. The Farmer Boy: What Shall His Future Be? Fifty minutes.
8. The Chinch Bug. Twenty minutes.

Lecturers Employed by the Ohio State Board of Agriculture, with Post-office Addresses and Topics.

John Begg, Columbus Grove, O.

1. Selecting and Feeding Cattle in Winter. Twenty-five minutes.
2. Keeping up Soil Fertility; How Best Accomplished. Twenty-five minutes.
3. The Value of Underdrainage. Twenty minutes.
4. The Ideal Farm Home. Forty minutes. Night.
5. Landlord and Tenant and Their Relation to Each Other. Thirty minutes.
6. Corn Culture. Twenty-five minutes.
7. Farm Literature, or What to Read. Thirty-five minutes. Night.
8. Practical Hog Raising. Twenty minutes.
9. The Farmer Boy and His Opportunities. Forty minutes. Night.
10. Culture and Care in Wheat Raising. Twenty minutes.
11. Is Diversified. Better than Special Farming? Thirty minutes.

O. E. Bradfute, Cedarville, O.

1. The Modern Beef Animal and How to Produce it. Thirty minutes.
2. The Calf. Twenty minutes.
3. The Value of a Pedigree. Twenty minutes.
4. The Agricultural Fair. Twenty minutes.
5. Management of a Pure Blood Herd of Cattle. Twenty-five minutes.
6. An up to Date Stock Farm. Thirty minutes.
7. How Prize Winners are Made. Twenty minutes.
8. Free Rural Mail Delivery. Thirty minutes.
9. The Farmer's Position. Thirty minutes. Night.
10. Why am I a Farmer? Thirty minutes. Night.
11. Special Purpose Against General Purpose, as Applied to Cattle. Twenty-five minutes.
12. The Various Breeds of Cattle — Descriptive and Historical. Twenty to thirty minutes.

W. N. Cowden, Quaker City, O.

1. Is Sheep Husbandry as Profitable as Other Branches of Stock Farming? Twenty minutes.
2. How to Make Sheep Husbandry Profitable. Twenty minutes.
3. The Mutton Lamb. Ffteen minutes.
4. Profitable Fruit Growing. Thirty minutes.
5. In the Peach Orchard for Profit. Twenty minutes.
6. Education Needed by the Farmer. Thirty minutes. Night.
7. Our Common Schools and Their Needs. Thirty minutes. Night.
8. Farming On or Off the Farm, Which? Twenty-five minutes.
9. How Taxation Affects the Farmer. Forty minutes. Night.
10. Laws Needed by Agriculture. Twenty minutes.
11. The Three Bells. Thirty minutes. Night.
12. How to Retain Fertility and How to Regain Lost Fertility. Thirty minutes.
13. Why am I a Farmer? Twenty minutes.
14. What is Pedigree Worth? Fifteen minutes.
15. In the Berry Field. Twenty minutes.

F. A. Derthick, Mantua, O.

1. Farming by Wind (Mill). Fifteen minutes.
2. Application of Manure. Fiffteen minutes.
3. Late Cultivation. Fifteen minutes.
4. Management of the Horse. Thirty minutes.
5. Why I am a Farmer. Forty minutes. Night.
6. Mixed vs. Special Farming. Twenty minutes.
7. Methods of Legislation. Twenty minutes.
8. The Cow, Her Management and Outlook. Thirty minutes.
9. Soil Building. Twenty minutes.
10. A Talk on Potato Growing. Twenty minutes.
11. Self Improvement on the Farm. Thirty minutes. Night.

J. Al. Dobie, Gutman, O.

1. The Main Things in Swine Husbandry. Thirty minutes.
2. Advantages of Partial Soiling. Twenty-five minutes.
3. Shall we Breed Higher or Feed Better? Twenty minutes.
4. Management of Winter Pigs. Twenty-five minutes.
5. Training Horses for Farm Work. Thirty minutes.
6. Preparing Seed Beds. Twenty minutes.
7. Barns and Outbuildings. Twenty-five minutes.
8. The Modern Farm Garden. Thirty minutes.
9. How to Make the Small Farm Pay. Twenty-five minutes.
10. The Educated Farmer. Thirty-five minutes. Night.
11. Character as Affected by Country Life. Forty-five to sixty minutes. Night.

W. W. Farnsworth, Waterville, O.

1. Can we Grow Apples? and How? Twenty minutes.
2. Pruning Trees and Vines. (Illustrated.) Twenty minutes.
3. The Farm Horse: His Selection, Management and Care. Twenty minutes.
4. Modern Potato Culture. Twenty minutes.
5. Small Fruit Culture for Home and Market. Thirty minutes.
6. Orchard Management. Thirty minutes.

7. Developing, Maintaining and Increasing the Fertility of the Farm. Thirty to forty minutes.
8. Spraying: Why, How and When. Twenty to thirty minutes.
9. Ornamenting and Improving the Farm, the Home and its Surroundings. Twenty minutes.
10. The Farmer's Boy; His Advantages and Disadvantages. Thirty to forty minutes. Night.
11. What is Happiness? Thirty minutes. Night.

C. M. Freeman, Rex, O.

1. How Shall a Young Man Begin Farming? Twenty-five minutes.
2. Caring for Cornfodder. Fifteen minutes.
3. The Preservation of Our Forests. Twenty-five minutes.
4. Why Farmers are Humbugged in Buying Fruit Trees. Twenty minutes.
5. Why Young Trees Die for Farmers. Twenty minutes.
6. What Varieties of Fruit to Plant. Fifteen minutes.
7. Some Business Requirements of the Farmer. Twenty minutes.
8. The Farmer's Door Yard. Twenty minutes.
9. Do Farmers Need to Organize? Twenty-five minutes.
10. How Shall the Farmer Boy and Girl be Educated? Thirty minutes. Night.
11. Can We Afford Township High Schools? Forty minutes. Night.
12. What Shall We do With Our Boys and Girls? Forty minutes. Night.

John Gould, Aurora Station, O.

1. Life on a Clay Farm. Thirty minutes.
2. Soil Improvement. Thirty minutes.
3. The Why, When and How of Corn Culture. Forty minutes.
4. Is the Silo "Fad" Over? Twenty minutes.
5. Types of Dairy Cows in Ohio. Forty minutes.
6. What a Dairyman Needs to Know. Thirty minutes.
7. Rations and Rational Feeding of the Dairy Cow. Thirty minutes.
8. Our New Dairy Dictionary. Twenty-five minutes.
9. Farmers' Gardens as Seen with a "Dark" Lantern. Twenty minutes.
10. Six Weeks with a Pennsylvania Institute Corps. Forty minutes.
11. Changes in Feeding the World. Forty minutes. Night.
12. Rural Town Improvements. Twenty minutes. Night.
13. Sixty Minutes in Maine. Forty minutes. Night.

J. F. Greene, Sandusky, O.

1. Recent School Legislation — What More is Needed? Twenty to forty minutes.
2. The Education of Farmers' Girls and Boys. Thirty to forty-five minutes. Night.
3. Our Inheritance. Thirty minutes. Night.
4. What are the Advantages of Township Supervision of Schools? Twenty-five minutes.
5. The Centralization of Country Schools — Is it Practicable and Best? Thirty minutes. Night.
6. The Farmer's Library. Thirty minutes.
7. Preparation of Soil for a Crop. Thirty minutes.
8. Value of Organization to the Farmer. Thirty minutes.
9. Small Fruit for the Home. Twenty minutes.

10. Shall Farmers Insure their Own Property in their Own Companies? Thirty minutes.
11. How to Organize and Manage Farmers' Mutual Insurance Associations. Thirty minutes.
12. Bicycle Paths in the Country — How to Construct Them, Their Advantages and Cost. Fifteen minutes.

W. R. Houlette, Columbiana, O.

1. Five Years' Experience in Spraying Fruits and Vines. Thirty minutes.
2. Two Years' Experience in the Growth and Culture of the Sugar Beet. Thirty-five minutes.
3. Fertilizers. Twenty minutes.
4. Subsoiling and Mulching Soil. Thirty minutes.
5. Horticulture. Thirty to thirty-five minutes.
6. Farmers' Mistakes and Failures. Twenty minutes.
7. The Farmers' Future. Twenty to twenty-five minutes.
8. Our Boys and Girls. Thirty to thirty-five minutes. Night.
9. Plant Growth. Fifteen to twenty minutes.
10. Parental Duty. Thirty minutes. Night.

G. C. Housekeeper, Bowling Green, O.

1. Special or Mixed Farming, Which? Twenty minutes.
2. Growing and Marketing Potatoes. Twenty-five minutes.
3. Fruits for Home Use. Twenty minutes.
4. Fruit Growing for Market. Twenty minutes.
5. Our Weather Service; Its Methods and Value. Twenty-five minutes.
6. The Farmer and the Public School. Twenty minutes.
7. Advantages of Farming. Twenty minutes.
8. Making Home and Farm Life Happier. Thirty minutes. Night.
9. A Valuable Possession; Our Sons and Daughters. Thirty minutes. Night.

George E. Lawrence, Marion, O.

1. The Strawberry. Fifteen to twenty minutes.
2. The Raspberry. Fiffteen to twenty minutes.
3. Small Fruits for the Home. Twenty minutes.
4. Clover. Twenty minutes.
5. Wheat. Twenty minutes.
6. Mysteries and Problems Still Unsolved. Thirty minutes. (For the young people.)
7. Needs and Necessities of the Hour. Thirty minutes.
8. The Farmer as a Citizen. Forty minutes.

T. C. Laylin, Norwalk, O.

1. Fields and Fences. Twenty minutes.
2. Breeding and Management of Mutton Lambs. Twenty minutes.
3. The Origin and Fertility of the Soil. Twenty minutes.
4. Keeping Up the Fertility of Our Farms. Twenty minutes.
5. Theory and Practice in Corn Culture. Twenty minutes.
6. Farmers' Problems. Thirty minutes.
7. Our Boys. Forty minutes. Night.
8. Genius in Farming. Forty minutes. Night.

J. A. Lehman, Savannah, O.

1. Business Methods. Fifteen minutes.
2. Home Conveniences. Fifteen minutes.
3. What of the Farmer — or Industrial Utility. Twenty minutes.
4. Leaks About the Farm. Twenty minutes.
5. Roads and Road Making. Twenty minutes.
6. How to Select and Handle Sheep for Market. Twenty minutes.
7. The Shepherd and His Flock. Twenty minutes.
8. A Plea for More and Better Live Stock. Twenty minutes.
9. The Farmer's Library. Twenty minutes.
10. Give the Boys and Girls a Chance. Twenty minutes.

S. K. McLaughlin, Hurford, O.

1. Breeding and Keeping Fine Wool Sheep. Twenty-five minutes.
2. The Farmer's Garden and Truck Patch. Twenty minutes.
3. Cross-Bred Yearlings for Mutton. Twenty minutes.
4. Good Roads; How to Secure and Maintain Them. Twenty minutes.
5. Agricultural Fairs; Their Use and Abuse. Twenty-five minutes.
6. Wheat Raising. Twenty-five minutes.
7. Preparing Wool for Market. Twenty minutes.
8. Corn Culture. Thirty minutes.
9. The Farmer's Wife. Thirty-five minutes. Night.
10. The Closing Century. Thirty minutes. Night.

H. P. Miller, Sunbury, O.

1. The Care of Young Animals. Fifteen minutes.
2. Care and Training of the Farm Team. Twenty minutes.
3. Employing Help on the Farm. Twenty-five minutes. Night.
4. Feeds and Feeding. Twenty minutes.
5. Crops and Rotation for a Sheep Farm. Fifteen minutes.
6. Bacteria in Their Relation to the Farmer. Twenty-five minutes. Night.
7. The Hothouse Lamb. Fifteen minutes.
8. Making Mutton. Fifteen minutes.
9. Causes of Losses Among Lambs, and Remedies. Fifteen minutes.
10. How Shoddy Affects the Wool Market. Fifteen minutes.

T. J. Miller, Leipsic, O.

1. Right Kind of Encouragement for the Young People. Forty minutes. Night.
2. The Kind of a Man the Times Demand. Forty minutes. Night.
3. Little Things on the Farm. Twenty-five minutes.
4. Program for the Farm. Twenty-five minutes.
5. Breeding and Feeding Cattle. Twenty-five minutes.
6. Breeding and Feeding Hogs. Twenty-five minutes.
7. Poultry for Profit. Twenty-five minutes.
8. What Fertilizers Should we Use and How Use Them? Twenty-five minutes.
9. Small Fruits for Family Use. Twenty-five minutes.
10. How to Prepare the Seed Bed and When to Plant or Sow. Twenty-five minutes.
11. Woman's Mission in the Farm Home. Forty minutes. Night.
12. The Idle Young Man and His Destiny. Forty minutes. Night.
13. Keeping Up Soil Fertility. Twenty-five minutes.

J. L. Roudebush, Stonelick, O.

1. Wheat. Fifteen minutes.
2. Care and Management of Small Fruits. (Illustrated.) Fifteen minutes.
3. Feeding Stock for Profit. Fifteen minutes.
4. Buy or Grow Nitrogen — Which? Fifteen minutes.
5. Natural Enemies of Insect Pests. (Illustrated.) Fifteen minutes.
6. Is it Profitable to Raise Horses — If so, What Class? Fifteen minutes.
7. Some Common Mistakes in Poultry Raising. Fifteen minutes.
8. Sheep — Several Reasons for Raising Them. Fifteen minutes.
9. Social Life on the Farm. Twenty minutes. Night.
10. Influence of Agriculture. Twenty-five minutes. Night.

George E. Scott, Mount Pleasant, O.

1. Improvements in Corn Culture. Twenty minutes.
2. Wheat Growing a Necessity. Twenty minutes.
3. Why Dairy Farming Pays. Twenty minutes.
4. The Swine Herd a Factor of Profit. Twenty minutes.
5. The Calf, Cow and Babcock Tester. Twenty minutes.
6. Discouragements in Potato Culture. Twenty minutes.
7. Fowls and Eggs for Table and Market. Twenty minutes.
8. Clover and What it Promises. Twenty minutes.
9. The Farm Fruit and Truck Garden. Twenty minutes.
10. The Cultivation of Manures. Twenty minutes.
11. Gems of Farm Life. Thirty minutes. Night.
12. Sunshine and Shadow in the Home. Thirty-five minutes. Night.

John L. Shawver, Bellefontaine. O.

1. The Farm Dairy. Thirty minutes.
2. Points for Butter Makers. Thirty minutes.
3. Feeds and Feeding. (Illustrated.) Thirty minutes.
4. Barns and How to Build Them. (Illustrated.) Thirty minutes.
5. Benefits of a Covered Barnyard. (Illustrated.) Twenty minutes.
6. The Farm Dwelling. Twenty minutes.
7. Household Helps. Twenty minutes.
8. Domestic Economy. Twenty minutes.
9. Farm Accounts. (Illustrated.) Twenty minutes.
10. Clovers and Their Values. Twenty minutes.
11. Making, Saving and Applying Manures. Twenty minutes.
12. The Farmer's Fruit Supply. Fifteen minutes.
13. A Plea for the Forests. Twenty minutes.
14. The Safeguards of Liberty. Twenty minutes.
15. Seedtime and Harvest. Fifty minutes. Night. (For the young people.)

A. Shirer, Dayton, O.

1. Making, Saving and Applying Manure. Twenty minutes.
2. The Clover Question. Twenty minutes.
3. Rotation of Crops. Twenty minutes.
4. The Farmer's Garden. Fifteen minutes.
5. Poultry. Twenty minutes.
6. Cost of Production. Twenty minutes.
7. Agriculture in the Public Schools. Twenty-five minutes.

8. Asparagus, Nutmegs (Melons), Strawberries and Early Potatoes. Fifteen minutes each.
9. Wayside Notes. Twenty minutes. Night.
10. Looking Both Ways. Thirty minutes. Night.

M. I. Todd, Wakeman, O.

1. The Sheep in Farm Economy. Twenty-five minutes.
2. Fertilizers, Their Uses and Abuses. Thirty minutes.
3. Varieties of Valuable Fruits for Home Use and Methods of Culture. Thirty minutes.
4. The Ideal Farmer. Thirty minutes. Night.
5. Needed Improvements in Our Public School System. Twenty-five minutes.
6. Taxation. Twenty-five minutes.
7. How Best to Breed and Feed for Mutton. Thirty minutes.
8. Methods in Rotation with Corn, Oats, Wheat and Clover with Timothy. Twenty-five minutes.
9. The Potato and its Culture. Twenty minutes.
10. Poultry Products and Profits. Twenty minutes.
11. Our Homes. Thirty minutes. Night.

S. H. Todd, Wakeman, O.

1. Deep Cultivation vs. Shallow Cultivation. Twenty-five minutes.
2. Buying and Using Fertilizers, How to Get the Best Results. Twenty-five minutes.
3. Corn Culture. Twenty minutes.
4. On Which Side of the Fence am I Farming? Twenty-five minutes.
5. How to Prevent and Cure many of the Diseases that Prey upon our Sheep. Twenty-five minutes.
6. Winter Lambs, Their Care and Management. Twenty minutes.
7. Does it Pay to Wash Sheep? Twenty minutes.
8. The Farmer's Garden. Twenty minutes.
9. The Farm and the Hired Man. Twenty-five minutes.
10. Early Maturity in our Animals, Its Value and How Obtained. Thirty minutes.
11. Poultry and the Egg Basket. Twenty-five minutes.
12. The Cross-Bred Animal for the Farmer. Twenty minutes.
13. Which of the Two is the More Important Crop, the Boys and Girls, or the Stock? Sixty minutes. Night.
14. Slippery Places of Life. Thirty minutes. Night.
15. Animal Formation Decides its Purpose. (Illustrated.) Thirty minutes.
16. My Experience with Clover. Twenty minutes.
17. Hog Cholera, How I Treat it. Twenty-five minutes.

E. Trumbo, Cranberry, O.

1. Does the Farm Pay? Twenty-five minutes.
2. Can we Keep up the Fertility of the Soil and Sell all of our Farm Products? Twenty-five minutes.
3. Crops and Stock as Influenced by Seed, Soil and Climate. Thirty minutes.
4. Crimson Clover. Fifteen minutes.
5. What Would Better our Condition as Farmers? Thirty minutes.
6. County Fairs. Fifteen minutes.
7. How we Learn to Think. Forty minutes. Night.

8. My Experience with Melons and How I Raise Them. Twenty minutes.
9. Farmers' Institutes and the Benefits of Association. Twenty minutes.
10. Tree Planting and Why. Ten minutes.
11. How we Should Use Our Surplus.

E. W. Turner, Newton Falls, O.

1. How Can we Improve the Public Highway with the Material at Hand? (Illustrated.) Thirty minutes.
2. The Farmer as a Manufacturer. In two lectures of twenty minutes each, or one lecture of thirty-five minutes.
3. The Possibilities of a Farmer's Son. Forty minutes. Night.
4. Horticulture in the House and Out. Thirty minutes.
5. Shall we Spray our Fruit Trees? Twenty minutes.
6. Seeds and their Adaptability. Thirty minutes.
7. What Can the Farmer do to Save Himself? Twenty-five minutes.
8. What I Would Do if I were a Farmer. Thirty minutes. Night.
9. Would the Pooling of our Interests as Farmers Pay us? Thirty minutes.
10. The Possibilities of the Farmer's Daughter. Thirty minutes. Night.

R. H. Wallace, Chillicothe, O.

1. The Sowing and the Reaping. Forty minutes. Night.
2. Feeding to Profit. Thirty minutes.
3. Heredity in Animal Life. Twenty-five minutes.
4. Skill in Farming. Thirty minutes.
5. What Constitutes a Farmer's Education? Forty minutes. Night.
6. The Jersey Cow. Twenty-five minutes.
7. The Farm Dairy. Twenty-five minutes.
8. Excessive Freight Rates — Causes and Cures. Forty minutes. Night.
9. Prehistoric Races of this Country. Forty minutes. Night.
10. The State Board of Agriculture and Farmers' Institutes. Thirty minutes.
11. Will the Future King of this Country be Corn, Cotton or Wheat? Twenty minutes.
12. The Relation of Farming to Manufacturing. Twenty-five minutes.
13. The Waterways of the State. Fifty minutes. Night.

A. L. White, Norwich, O.

1. Skilled Labor on the Farm. Fifteen minutes.
2. Swine Raising. Fifteen minutes.
3. The Hen and Her Family. Fifteen minutes.
4. Growing and Marketing Peaches. Twenty minutes.
5. Corn. (Illustrated.) Twenty minutes.
6. Field Management. (Illustrated.) Twenty minutes.
7. Our County Fairs. Twenty minutes.
8. Confidence in our Work. Twenty-five minutes.
9. Children of the Farm. Thirty-five minutes. Night.
10. Shall we Farm? Thirty minutes. Night.

C. G. Williams, Gustavus, O.

1. Why I Built a Silo. The Kind, and Expense of Building and Filling. Twenty-five minutes.
2. The Problem of Feeding the Dairy Cow. Twenty-five minutes.
3. What Crops Should the Farmer Sell? Twenty minutes.

4. Wheat; Its Culture and Value. Twenty minutes.
5. The Way I Grow Potatoes. Twenty minutes.
6. The Best Way to Buy Commercial Fertilizers. Thirty minutes.
7. A Working Library for the Farmers. Twenty minutes.
8. The Round Year: What Constitutes a Year's Work at Elmwood. Twenty-five minutes.
9. The Farm — and What Else? Forty minutes. Night.
10. What Inducements Does the Farm Hold Out to Young Men? Forty minutes. Night.

J. E. Wing, Mechanicsburg, O.

1. Woodland Farm as it Was and Is. Thirty minutes.
2. Tile Drainage. Thirty minutes.
3. Success in Clover Seeding. Fifteen minutes.
4. Some of the Newer Crops that have Succeeded with me. Twenty-five minutes.
5. The Business Pig. Twenty minutes.
6. Fattening Lambs in Winter. Thirty minutes.
7. Money in Lambs: How to Get it Out. Thirty minutes.
8. The Parasitic Diseases of Sheep. Twenty minutes.
9. The Model Barn. Thirty minutes.
10. Ranch Life. Forty minutes. Night.

PAPERS READ

AT

FARMERS' INSTITUTES 1898-1899.

Forwarded to the Secretary of the Department of Agriculture for Publication in the Annual Institute Report.

SCIENCE TRAINING FOR FARM LIFE.

By Prof. A. D. Selby, Botanist and Chemist, Ohio Agricultural Experiment Station, Wooster, O.

In the discussion of this subject it will be the endeavor to consider the present and probable future conditions concerning the farm, and to discuss what bearing training may have upon these relations. I would remind you at the outset that the American farmer is a land owner. In this respect he is different from his English prototype, and far more different from the French peasant and the Mexican peon. He works in an age of rapid scientific development — of science applied to industry — in an age in which changes are almost kaleidoscopic; the whole world is his mart; the fairest portion of the world is his workshop. And what has been generally said of the farmer of the United States is true in an equal measure of the farmer of Ohio. Strange and paradoxical as it may seem, the sciences which have to deal with things remotest from every day experience, and from every day life, were the first sciences to be developed. I may mention astronomy, the oldest of them all, whose realm is the stellar universe; physics, or philosophy, which deals with matter in its manifestations, as heat, light, etc.; chemistry which aims to unlock the remotest combinations of matter. The application of these two last named sciences to our conditions of life is a recent feature. Geology, the science of the earth's crust, is not a century old; botany dates only from the time of Linnæus, about one hundred and fifty years ago; while agriculture, oldest as an art and most essential to man's maintenance has but become a science in our own day. Should we seek an explanation of this paradox it may be found in the very great complexity of a science like agriculture, which deals with living things — which seeks to cultivate plants successfully and rear animals with profit. But should the claims of agriculture to scientific rank be questioned I believe demonstration is not difficult. I point to the scientific principles of crop rotation with clover and other leguminous crops — demonstrated and it may be said demonstrable only by field practice — the development of correct principles of stock feeding, the application of scientific knowledge in the use of fertilizers and manures and the application of the general principles of selection in securing the best varieties of cultivated plants and rearing the most profitable breeds of domestic animals; or further to the application of entomology and botany in the protection of the farmer's crops from parasites and from destruction. Indeed, we may say truthfully that agriculture makes all the sciences pay tribute. With this development of scientific agriculture have come treatises upon agriculture and the development of our unique and magnificent U. S. Department of Agriculture; colleges of Agriculture and Mechanic Arts, founded upon land grants from the public domain, a representative of which we have in our excellent Ohio State University, and lastly the Agricultural Experiment Stations, organizations to develop a correct and scientific agricultural knowledge, one being located in each state and devoted especially to the interests of the citizens of that state. If we consider these last three classes of institutions and recognize how largely they have been established by government aid we will be able to realize how important statesmen have viewed the proper development of agricultural resources. To succeed, the farmer of to-day must be prepared to avail himself of all possible helps. And how much more truly will this be demanded of the farmer of the future? We have in a few years past been experiencing marked agricultural depression. Prices were never before lower. Financial returns have seemed to be a thing of the past. If it is possible for this to be true now how much more likely is it to be true when our population shall have doubled, trebled or even quadrupled? It does not seem unlikely that the young people now growing up on the farms of Ohio will be called on to meet the conditions under which double or treble the present population of this state will be compelled to live in it. In order then to be prepared not only for the demands of the present but to anticipate new demands, based upon the conditions arising in the future, I think you will all agree with me that the farmer must have a thorough training. But you ask, what training? I answer, Science Training. Training in those sciences which underlie agriculture; those sciences not excluding the arts of practice which have to do with our working and our living. If you will agree with me in this then you will at once agree that this training must be near to every day life and to the working experience of the farmer and the farmer's children. The old ideals of education were away from the things which pertain to every day life. The new ideals must for the farming community, be near to every day life.

What constitutes the science training necessary under these conditions as they have been stated? It seems to me they will be covered under three heads: First, training, self-developed or otherwise, in methods of reaching truth. Training in observation and record. Second, training in the principles of two or more sciences, selecting subjects in which particular interest is manifested. Third, training in the use of books upon all subjects. These principles, as I have stated them, largely recognize that self-help is the best of all help and the great object of the measures thus outlined must be to appeal to the interest and self-activity of those who are to be benefited.

Let us now consider the first line of training, which we have called training in methods of reaching truth and in methods of observation and record. This statement has in mind that the fullest self-development is possible to some persons without large opportunities in the line of school instruction. Some of the most acute observers and clearest reasoners that it has ever been my good fortune to meet, have been self-developed in these lines in the surroundings of the farm. There are many ways in which the current day farmer may the better make use of all his opportunities in this direction. All of us have more or less of faculty but some remain ignorant of their real powers because of lack of interest, or other incentive; they appear never to have exercised them. Whatever may appeal strongly to self-interest in this line should be utilized for farmers of all ages, but a beginning should be made with the children. I would say then, first, begin with the children in school and I mean by that not alone with the city children, which has been the case too much in the past, but with the children in the country school; and the line of beginning I should suggest is that of nature studies. Studies to develop powers of observation, to develop close study and accurate reasoning from cause to effect; in other words to develop. at an early age, those principles by which all arrive at truth. The means at the command of the teacher of children in the country school are largely as the teacher wills them. In case, even, that expenditures of money are called for. the development of a lively interest in the children will result in reaching the patrons of the school and, through them, reaching the proper authorities for purchase.*

But most of this work calls only for a very little expenditure of money but a large expenditure in love of truth and in interest in the development of lines that may appeal to the children. These studies should pertain to plants, to animals — including insects — to weather conditions and to the particular habits and the migrations of birds. Take the case of plants; this work may include the study of seeds and their germination; the study of plants, including shrubs and trees in relation to the soil on which these are found growing naturally; the study of flowers in relation to their adaptations of structure to favor pollination by wind and by insects and the cultivation of flower gardens, to give impetus to proper ideas concerning the esthetic side of life and to the general beautifying and adorning of home and school surroundings. The possibilities along this line are very, very many. The study of seeds may be conducted either in winter or in summer. If in winter, then the seeds should be planted in window gardens or boxes in the windows of the school and the home. Following this in early spring the germinated seeds of young plants in the woods, the garden and the field, will call for study. In the summer and autumn fine opportunity will be given to study the means by which the seeds are carried from place to place; then the pupil may be set to work to find out how many different methods of dispersal may be recorded, particularly among the various plants on the farm. These, of course, will begin with "old man dandelion," will include the naughty hound's tongue, beggar's lice, stick-tights, Spanish needles, cockle-bur, thistle, milkweed or wild cotton, catalpa beans, blackberries, dogwood berries, acorns and mistletoe. What boy has not looked through the opening in the top of his summer hat and seen thistle down moving in the upper atmosphere? Who has not gathered a large crop of Spanish needles, cockle-bur and beggar's lice on nutting excursions in the fall? All these have to do with the adaptations of the plants producing these seeds to the surroundings under which they must be dispersed. If some pupil has a camera, then collections showing these features may be photographed after they have been mounted and classified and the results of one year may be made a stimulus for the next group of little farmers. Since so much of the school term is usually passed during winter, growing seeds in window gardens may be made one of the most profitable methods of nature study. For this, contributions of seed may be called for but in nearly all cases to secure the variety essential to interest in this work the teacher will be called on likewise to contribute particular sorts. Even the common seeds may be classified in several ways. For this work one class may be seeds with rather thin seed leaves like flax, pumpkin, the squash, the cucumber, the white maple; another class with thick seed leaves like the pea, the bean, the acorn, the buckeye, the horse-chestnut, etc. Still another, those seeds which in addition to the seed leaves have surrounding the leaves, masses of stored up food for the growth of the young plant. Some of them are the morning-glory, the four-o'clock, wheat, corn and oats; but these last three differ from all those named before in that they have only one seed leaf.

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* School authorities are often to secure some really great help. For plants let it be Kerner and Olliver's Natural History of Plants (Henry Holt & Co.).

Planting time may be the jubilee half hour. An effort may be made to have all planting done about the same time and then the reports of the size of the seedlings at different dates will be a good index both of warmth of situation and care devoted. It goes without saying that each gardener or farmer should aim in this case to keep a record of the date of planting. appearance of the first plants, and the extent of growth for every week involved. Part of those grown in the schoolroom should be planted in boxes or vessels, filled with well moistened sawdust, as some of them will need to be taken up for subsequent examination. While the workers are waiting for the seeds to come up, seeds of one of the classes may be soaked twenty-four to thirty-six hours in water, or moistened cotton, when they will be ready to examine, to dissect and to make drawings showing the little plants within the seeds. It will not always be clear to the children at first examination what these parts are, and in all cases they should be discovered for themselves; but if seeds of castor bean are soaked and opened it will be found that on each flat surface of the halves into which the seed will divide more or less readily, is a little leaf in appearance with middle vein and branching veins. The venation here will at once suggest the relations. Drawings and notes may be made of this by children who are old enough and little ones will find plenty to interest them likewise, although as the work advances, divisions may be formed. Some larger boys may be encouraged to take a coffee box, paint it black inside and out with lampblack, after having provided an opening in one side closed by a sliding door, and in such a dark chamber seedlings may be grown excluded from the light. It will be best usually first to germinate the seeds and then transfer to saw dust in dark chamber. For that a proper study would be to compare the differences in seedlings grown in the light and away from the light. How many leaves in each case? How spread? What color? Why the differences? There are so many studies that may be made of all of the seeds and of the seedlings. Professor Bailey has written a leaflet showing how the pumpkin seed comes out of its shell (seed covering). All of the seeds have a similar experience in getting rid of the seed coat.

If there is an especially ingenious boy, he can possibly find a clock and construct a wheel showing that the root or radicle of the seedling grows downward because attracted by gravitation, and that it will grow in any direction it may happen to be placed if left moistened upon a disk, which is continually rotating in a vertical place in such a way as to bring these parts in all directions during the rotation of the disk.

The pretty Hepatica, or liver leaf, brings out its early flowers clad in furry overcoats. Our first thought may be that the overcoat protects from cold, but the hairs are likely of more benefit in protecting the plant from being dried out by the cold winds of that time of year. It will be found indeed that in late summer the leaves of the Hepatica have lost the hairy covering. If one line suggested in this way, or originated by any one, is properly selected and followed out, it will invariably lead to other lines and thus the child becomes insensibly trained to seek and to recognize truth and to love truth.

Each schoolhouse should have a thermometer for noting the temperature, and many of them may have barometers, though this is by no means general. Some one pupil may be charged with the weather record for a given period, which will aid him likewise by encouraging him to make home weather records; and doubtless nearly every district which is far away from any other volunteer stations of the weather bureau, may do something toward local records by writing to the director at Columbus and learning what he desires done. Particular records may be kept by the pupils themselves.

The study of the transformation of insects is a most interesting one. Bulletin 86, of the Ohio Experiment Station, relates the life history of a moth and a butterfly and the writer knows, by actual observation, that nearly all children may be interested in pretty insects; in studying their changes from caterpillar or larva to pupa or chrysalis and finally to moth or butterfly. Further in this connection all young persons should be encouraged to self-help and to helping others by the line of work that is herein suggested.

In the next place it is suggested that the young be taught one or more sciences in school. If the nature studies have been thoroughly carried out many of the children before leaving the country school, in case the township does not possess that very essential thing, a township high school, will be ready to study some science in which they are particularly interested. And in case of the township high school, or village high school serving as such, most certainly some science such as botany, zoology, geology, philosophy or physics, should be studied. It is not so essential that a particular one should be studied as that the proper care for close study and accurate statement be included in some line of instruction.

Lastly, teach the use of books and the love of expression. Truly it has been said there are two ways of knowing; one is having knowledge more or less complete, the other is to know where to gain information. The busier the life of a person the more that person will be obliged to depend upon knowledge recorded by others. We cannot escape it if we will. We must rely upon books both for instruction and for recreation. The use of the dictionary, the use of the encyclopedia, the use of the index to every book, the making of a classified list of journals, or books that have been seen and handled by the pupils, will surely develop a love for books and a desire to possess them.

These things may mean a recasting and a revising — a revivifying — of courses of study in township high schools; an introduction of those subjects or branches which will be along the line of the work of most value, and if so it is not necessary to shirk from doing it. It is better to introduce those things which come within reach of the experience of the persons who are to be farmers, or who have to do with the farm in some mercantile or professional walk of life, than it is to take up those things which give no better training but will lead away from this fundamental calling of agriculture. Some foreign language is of greatest value; it should if only one, be a living tongue. Libraries may be built up or organized by publications which may be obtained for the asking. The historical collections of Ohio, that are now being distributed by members of the legislature, the various reports of Departments and Bureaus that are sent out from Washington by congressmen and senators, the publications of the Ohio Experiment Station, and the bulletins of other Experiment Stations where these bear upon subjects under study, are interesting and may be obtained for the asking.

It must invariably follow that persons who are trained, first, in seeking truth, second, in acquiring knowledge, since there can be no proper recognition of truth and untruth unless the individual is fortified by knowledge, and third, trained in the knowledge and love of good books, is better prepared not alone for the active operations of life but is far better prepared for the enjoyments and duties of whatever vocation he may follow than if he lacked that training. One who loves truth must certainly learn to love the embodiment of all this life; to love God. He who loves good books, he who loves to surround himself with the best things of this world, the best expression and noblest aims, will in turn himself be better. The young man thus fortified against temptation will be found at home rather than on the village corner; the young man thus encouraged in extending his knowledge and expanding the scope of his experience, as well as in beautifying his character and in adorning his language will not care for the buffoonery of the saloon. The young woman who is thus surrounded and encouraged will love to beautify the home, will love its adornments, its conveniences, will have an appreciation of the life of the farm and the use of the means of knowledge placed at the command of the farmer of to-day; and the farmer of the future will at the same time be likewise best prepared for any calling to which he may feel the greater impulse. There is no hindrance like ignorance. There is nothing so likely to breed hatred as the lack of knowledge and lastly there is nothing so likely to lead to disappointment in life as the want of proper measure between the possessions of ourselves and our surroundings.

I may close as I began: the farmer of the future is called on to know these things of the life of the world and in proportion as he knows them will he be prepared to be a better farmer than the farmer of the past.

SOIL FERTILITY; ITS NATURE AND PRESERVATION.

By C. E. Thorne, Director Ohio Experiment Station, Wooster, O.

The study of the methods by which the soil has been slowly formed during the ages since time began is a most interesting one; but I must pass over it here with simply the bare statement that the soil, as man knows it, is simply a mass of pulverized rock, very finely ground in clays, a little coarser in sandy soils, either derived from the slow weathering of the rocks which lie below it, or transported to its present place through the agency of flowing water or moving ice, and mingled with the remains of countless generations of plant and animal life which have grown and died upon it.

The soil furnishes that portion of the plant which is found in the ash when the plant is burned, and which constitutes only one to two per cent of the green plant, together with a little nitrogen — averaging about half of one per cent — and the seventy to eighty-five pounds of water which are found in every hundred pounds of succulent plants. Measured by the relative weights, the mineral and nitrogenous plant food furnished by the soil would seem to be of small importance, as compared with the twelve to twenty-five or more pounds of carbonaceous compounds — starch, sugar, fiber and fat — all of which are derived from the atmosphere; but the fact is that the supply of soil food and water controls the growth of the plant, and that the assimilation of carbon is only limited by that of minerals and nitrogen.

The water supply is a matter of the first importance, as every farmer knows, and an hour could be profitably spent in discussing this point alone; but I must pass it by with a mere reference, and with the suggestion that no farmer can afford not to possess Professor King's little book, "The Soil," published by the Macmillan Company of New York and sold at seventy-five cents; this book deals more fully and practically with this question than any other in the language.

Plants require ten or twelve chemical substances for their growth, of which the soil furnishes six: phosphoric acid, potash, iron, lime, magnesia and sulphur. Practically all soils contain a sufficiency of all these except phosphoric acid and potash for indefinite crop production, but iron and lime may serve other purposes than as plant food, which it is important to understand.

THE ROLE OF IRON IN THE SOIL.

The thin black scales which fall from the blacksmith's anvil are a chemical combination of the heated iron with the oxygen of the air, produced under the influence of the intense heat of the forge. Let a handful of these scales, or of iron filings, be moistened with water made slightly acid, and in a little while the mass will begin to turn red, and will gradually be converted into a fine red powder. Under the influence of moisture the iron has absorbed still more oxygen from the atmosphere, and the red iron-rust which results will be found to be thirty per cent oxygen. Now, all productive soils contain more or less iron, and its affinity for oxygen is one of the factors for converting these soils into a condition available to plants. Iron is essential to all life. It gives the green color to the blade of grass and the leaf of the tree, and the red color to blood. Being thus essential it is found everywhere, and usually in most abundant quantity. The analysis of two of the soils occupied by the Experiment Station shows three and one-half per cent of iron-rust in the one at Columbus and five and one-half per cent in the one at Wooster, equivalent to nearly two pounds of metallic iron to every cubic foot of soil in the one and more than three pounds in the other. Nor are these soils especially rich in iron. The red soils of Tennessee, Alabama and Georgia frequently show two or three times as much iron as we have found in our Ohio soils. So abundant is iron that we do not need to take any thought of it as a constituent of soil fertility; but the presence of a liberal amount usually insures a soil that will be easily worked; and moreover, the readiness with which iron-rust parts with and reabsorbs oxygen makes it a factor of some importance in facilitating those transformations in the soil by which the inert plant food there is converted into available forms.

Every one has noticed the tendency of wood to decay around rusting nails and of cloth to become rotten when kept long in contact with rusty iron, a tendency due to the oxydizing influence of the iron-rust; but just this influence is being constantly exerted by the minute particles of iron-rust mingled intimately throughout the soil; they are constantly giving up oxygen to the decaying vegetation of the soil and as constantly reabsorbing it from the atmosphere.

It follows, therefore, that a soil containing a fair proportion of iron will be not only more easily worked, but also more productive than one deficient in iron.

THE FUNCTION OF LIME.

The superior value of soils resulting from the decomposition of limestone rocks has been generally observed, and examples of this are easy to find in the southeastern counties of Ohio, where the hills contain alternate strata of sandstones and limestones, and where the soil has been formed from the rocks underlying it, and not transported from place to place as over the glaciated portion of the state. As one travels through these hill counties the soils formed from the limestones may be readily located by the superior growth of the crops upon them.

Lime is essential to life, whether of plant or animal; but there are few soils which do not contain an abundance of lime for purposes of direct plant food. A crop of twenty-five bushels of wheat, with its straw, contains only nine or ten pounds of lime; one of fifty bushels of corn, with its stover and cobs, about twenty pounds; one of one hundred and twenty bushels of potatoes, with their tops, about twenty pounds; one of two and one-half tons of clover hay, about one hundred pounds, while a single ton of barnyard manure may contain as much as twelve to eighteen pounds, and commercial fertilizers carrying phosphoric acid contain equal or greater quantities of lime, phosphoric acid being always applied in the form of phosphate of lime. But lime would be carried off in an average rotation of cereals and clover in but little greater proportion than phosphoric acid; so that if we keep the phosphoric acid supply sufficient we are not likely to lack for lime.

Take again the two soils I have already referred to; both are drift soils, and both overlie other rocks than limestones, but the one at Columbus has been modified by the limestone gravel carried in the drift to a greater extent than the one at Wooster, and we find in the former four times, and in the latter three times as much lime as phosphoric acid. In short, we may safely assume that where the soil contains lime enough to make the well or spring water perceptibly hard there will be no lack of lime for plant food.

But lime, like iron, serves other purposes in the soil than that of plant food. The application of lime to a heavy clay has a tendency to make the soil looser, as may easily be shown by mixing a little air-slacked lime with clay, puddling it into little balls and drying them. The balls mixed with lime will crush much more easily between the fingers than similar balls made without any lime. Clay land that has been thus lightened with lime will remain more porous for several years. To accomplish this purpose the lime should be applied in liberal quantity, and is actually used at the rate of four to six tons and even more per acre.

Lime not only makes clay lands loose, but it tends to fill up the interstices in sandy soils, making them more retentive of moisture and less liable to injury from drouth.

Lime also, like iron, has a tendency to hasten the decay of vegetable matter in the soil and thereby promotes the more rapid conversion of the inert plant food in the soil into an available form, the consequence of which action is that a too liberal use of lime may finally exhaust the soil of those elements of plant food which crops require in larger quantity than they do lime, and hence the old couplet:

"Lime and lime without manure,
Will make both farm and farmer poor."

Still another function of lime is to correct acidity in the soil; and recent experiments by the Rhode Island Experiment Station indicate that this may be a most important work on some soils and for some crops.

Whether lime is needed for a particular soil can be most certainly and cheaply learned by actual experiment on the soil itself. A few bushels of fresh lime piled in heaps of half a bushel to a bushel each, a rod apart, covered with loose earth until the lime slacks, and then mixed with earth and scattered over the surface will answer this question, one way or the other.

Magnesia is another substance which plants require for their growth, but it, like lime, is usually found in the soil in abundant quantity, and the same is true of all the other chemical substances required except three — phosphoric acid, potash and nitrogen.

PHOSPHORIC ACID AND POTASH.

The soil analyses I have mentioned show nearly five thousand pounds of phosphoric acid per acre, taken to the depth of one foot, and twice as much potash at Wooster and four times as much at Columbus; and yet the addition of easily soluble phosphates to either of these soils produces a marked increase of crop, especially at Wooster, and under certain conditions we may be able to produce a further increase by the addition of potash salts also.

The explanation of this seems to be that the soil is stingy of its phosphoric acid and potash, and holds them in so tight a grip that our crops cannot secure enough to produce a maximum yield. In fact, those constituents of the soil which plants require for their growth could not long remain in it if they were in an easily soluble condition, for they would soon be washed out of the surface and carried off to the sea, or else carried down into the deeper subsoil, where they would be largely out of reach of the crops. And if this did not happen we may be sure that man would manage to get away with what the water did not.

There is phosphoric acid and potash enough in the upper foot of either of these soils to furnish a supply for twenty-five bushels of wheat per acre for four hundred years, and we may be sure that if the present generation of mankind could get at it they would not take much thought for those who are to come in the twenty-fifth century. But Nature has taken care that a spendthrift humanity shall not be able to completely squander her store of potential food, however wastefully we may destroy her forest growth; and we find that these soils which are so richly stored with plant food will only yield us a niggardly ten or twelve bushels of wheat per acre per annum, unless we feed our crops from other sources than the soil.

THE NITROGEN SUPPLY.

Thus far I have discussed the supply of mineral plant food only, that which we find in the ash when the plant is burned, and which constitutes less than two per cent of the weight of the growing plant. Another most important element of plant food furnished by the soil is nitrogen, one of the chief constituents of the air we breathe, and therefore one of the most abundant substances in nature; but one which is dealt out to our crops with such a parsimonious hand that in many cases the supply of nitrogen controls the yield of crop.

In the condition in which nitrogen exists in the air it is entirely beyond the reach of the plants we cultivate. It must first be brought into combination with some other substance.

In the atmosphere nitrogen and oxygen are simply mixed together, four parts of nitrogen to one of oxygen. If, however, you take these same two gases, mix them in the proportion of one part nitrogen to three of oxygen and pass an electric spark through the mixture, under proper conditions they will enter into chemical combination — a very different thing from simple mixture, producing nitric acid, one of the most corrosive substances known, and entirely different in its properties from either of the gases composing it. If, now, you add nitric acid to potash, under certain conditions, you will produce another combination, known to the chemist as nitrate of potash, and in the common vernacular as saltpetre. Probably no one but a chemist would ever suspect that saltpetre is simply a combination of nitric acid and potash.

Saltpetre is easily dissolved in water. It contains, in soluble form, two of the most important elements of plant food, and used under proper conditions it is one of the most effective fertilizing substances known to man.

When nitric acid combines with an alkaline base, such as potash, the resultant product is called a nitrate, and nitrates as a rule are among the most efficient carriers of nitrogen to vegetation. The one of these generally used is nitrate of soda, a salt which is found in immense deposits in Chili, in a region where no rain ever falls, and which is there dug up, refined, and shipped to all parts of the world. It is often called Chile saltpetre. Although soda is found generally in the ash of plants, it does not seem to be essential to their growth. The reason we use nitrate of soda as a fertilizer instead of nitrate of potash is that it is cheaper to furnish nitrogen in nitrate of soda and potash in the muriate of potash, which is another salt found in great natural deposits near Stassfurt, Germany, than to give them in the single combination known as saltpetre.

Another form in which nitrogen is carried to the soil is the combination of nitrogen and hydrogen known as ammonia, and which contains about eighty-two per cent of nitrogen. The common hartshorn of the smelling bottle is ammonia gas dissolved in water. Sulphuric acid combines with ammonia, producing sulphate of ammonia, which is a salt resembling nitrate of soda, muriate of potash and common salt, in appearance. It is formed as a by product in the manufacture of illuminating gas, and is largely used as a fertilizer.

A third carrier of nitrogen to vegetation is refuse animal or vegetable matter. The refuse meat, blood, bones, etc. of slaughterhouses contains considerable percentages of nitrogen; so do the various oil meals, wheat bran and other by products, as well as the manure of the barnyard. To the nitrogen in this class of carriers we give the name "organic nitrogen."

When you buy nitrogen in the fertilizer sack you get it under the name of "ammonia," this term having been adopted by the trade to cover nitrogen in all its form. Properly speaking, however, the nitrogen in the fertilizing materials commonly used in Ohio is not in the form of ammonia, but in that of organic nitrogen.

We have therefore three general forms in which nitrogen is captured and carried to our crops: 1. Those in which the nitrogen has been combined with oxygen, making nitric acid, and this nitric acid has been combined with some alkali, usually soda or potash, giving us a nitrate. 2. Those forms in which the nitrogen has first been combined with hydrogen, making ammonia, and this has again been combined in a salt that we can handle, usually the sulphate of ammonia; and 3. Those in which the nitrogen has once been incorporated with living tissues — plant or animal — and is given back to the soil again through the death and decay of these tissues.

Large deposits of organic nitrogen exist in the soil, in the form of the partly decayed vegetable matter there. In the two soils to which I have already alluded we found organic nitrogen at the rate of thirty-three hundred pounds per acre at Wooster and in twice that quantity at Columbus.

When we purchase nitrogen in the fertilizer sack we pay for it at the rate of ten to twenty cents per pound, whereas we buy phosphoric acid and potash at from four to six cents. But nitrogen not only costs more per pound than any other constituent of fertility, but it is required by crops in much larger quantity. A rotation of crops, for instance, which would carry away one hundred pounds of phosphoric acid from an acre of soil would take two hundred and seventy-five pounds of potash and three hundred and twenty-five pounds of nitrogen. In the case of the soil at Wooster I have already shown that there is phosphoric acid and potash enough in the upper foot to supply four hundred crops of wheat, of twenty-five bushels each, but there is only nitrogen enough for sixty-six such crops. It is very evident, therefore, that if this soil is to be handed down to even our immediate successors in an unimpaired condition, energetic means must be maintained to keep up the nitrogen supply.

A crop of twenty-five bushels of wheat, with its straw, or one of fifty bushels of oats, or one of two and one-half tons of timothy hay would each carry away from the soil about fifty pounds of nitrogen, and one of fifty bushels of corn would take off more than seventy pounds. In the ordinary, factory-mixed fertilizers, at the prices at which they are sold at retail, nitrogen costs about twenty cents per pound; in nitrate of soda the cost is about fifteen cents, and in slaughterhouse tankage it may be bought at six to eight cents. But when we supply nitrogen to these crops in any fertilizer we never get it all back in the increase of crop. There is always more or less waste, either by washing out of the soil or by entering into insoluble combinations in the soil which the growing plants cannot redissolve. If we get back one pound in the crop immediately following the application for every two applied, we do extremely well. The only way in which an amount of nitrogen may be recovered in the crop, equivalent to that applied in the fertilizer, is by growing the cereal crops in short rotation with some crop of the clover family, and in this case we get back, not all the nitrogen applied in the fertilizer, but a part of that, in connection with a portion of nitrogen captured by the clover from sources inaccessible to cereal plants and left in the soil for the use of the crops which follow it.

The discussion of the clover problem requires a lecture by itself, so I must pass over it here, with the bare assertion that clover does leave in the soil more nitrogen than it finds there.

The points to which I wish to call attention here are that there is a considerable store of nitrogen in the soil; that, under an unthinking husbandry, this store is liable to be locked up and kept away from our crops when they need it, and then unlocked and wasted when they cannot use it, and that by intelligent management we may reverse this process and effect a very great saving of this costliest constituent of soil fertility.

I have already alluded to the stinginess with which Dame Nature yields up to our crops her stores of potash and phosphoric acid. She is equally parsimonious in dealing out the nitrogen supply, and when left to herself there is a constant accumulation of nitrogen in the soil; for there was no nitrogen in the barren sands which were washed by the hot waves of the primordial seas. — I would like to stop and tell you how it first got there, for the process is still going on, but it is too long a story, and I must pass on and take up the question as we have to deal with it in our fields. — This store of soil nitrogen is found in the remains of the countless generation of plants, worms, soil insects and other similar material, which has accumulated since the beginning of time and to which we give the name humus.

The nitrogen in humus, like the phosphoric acid and potash in the rocky particles of the soil, is not in condition to be fed upon by plants. Were it in such condition there could be no accumulation in the soil, for that remaining from one season's growth would be washed out by the winter's rains before the plants of the next year could seize upon it. Before it can be of any service to growing crops it must first be worked over into more soluble forms, and this service is performed by the process which we call decay. But what is decay? You are all aware that frozen substances do not decay, neither is there any decay in bodies which have been made absolutely dry, so long as they are kept dry. In short, decay only takes place under those conditions of temperature and moisture which are essential to life, and the microscope, aided by the apparatus of the modern bacteriologist, has shown us that decay is neither more nor less than the work of living organisms, which derive their sustenance from the dead tissues of the decaying substance. There are various classes of these organisms, and their work gives rise to various products. A tree falls in the forest, and after many years it will have utterly disappeared, leaving nothing to mark the place where it lay. The carbon of its tissues has united with the oxygen of the air, under the action of oxygen-feeding bacteria, and has gone off in the form of carbonic acid gas. An animal dying and similarly exposed to a full supply of oxygen disappears in a similar manner, but also with the evolution of gases carrying nitrogen. In the heating of a manure heap this last form of decay is very effectively demonstrated. The pungent smell of ammonia shows us that the nitrogen of the manure and the hydrogen of the moisture present are being brought into combination, and that this combination is escaping into the atmosphere. In the soil a still different operation is taking place; the nitrogen of the humus of the soil is being combined, under the influence of bacterial growth, with the oxygen of the air which circulates in the interstices of the upper soil, and nitric acid is evolved, which in turn unites with the potash and lime found close at hand and we have nitrates on which higher plants may feed.

Why is not ammonia produced in the soil as well as in the manure heap? Probably it is, to some extent, but experiments have shown that most of the ammonia escaping from the manure heap may be captured and held by covering the heap with a layer of fine earth. In other words, Infinite Wisdom has provided that the excreta, which careless humanity allows to accumulate upon the surface of the ground, shall be converted into harmless gases and dissipated in the atmosphere as rapidly as possible, while those once placed within the earth shall be held there, as in a storehouse, to serve for the feeding of plants.

NITRIFICATION.

The conversion of the inert humus nitrogen of the soil into active forms, through the agency of bacterial organisms, is termed nitrification. At summer temperatures these organisms are constantly at work in soils where the conditions of air and moisture are suitable to their growth, breaking down the dead organic matter found there and converting it into forms upon which higher life may feed again. These organisms, like all living things, build up their infinitesimal structures out of the elementary substances of rock, water and air. They, as well as the higher forms of life, must have nitrogen, potash, phosphoric acid, and especially lime for their growth, but they are able to use these materials, some of them, at least, in a cruder condition than can the higher organisms; somewhat as the lower animals are able to convert the grass of the field, upon which alone man would starve, into the most nourishing of food for humanity.

The nitrifying organisms of the soil can only accomplish their function in the presence of free oxygen, since oxygen is one of the constituents of nitric acid; hence air must be admitted to the soil and excess of water must be removed, because water and air cannot occupy the same place at the same time.

We have here a clear explanation of the necessity for drainage and for stirring the soil. It is true that the soil is not stirred in pastures and meadows; but the close occupation of such soils by the growing roots of the crops tends to keep them more porous than soils which are comapartively bare.

Another necessity to the success of the nitrifying process is an alkaline base, such as lime, potash or soda, with which the constantly forming nitric acid may unite. A decided acidity in the soil is fatal to the growth of certain plants, and the Rhode Island Experiment Station has shown, by a series of striking experiments, that the correction of this acidity by the use of lime may make all the difference between failure and success in crop production.

In the early days of gunpowder, saltpetre was made by throwing up heaps of porous earth, mixed with sods, lime and ashes, and watered with manure liquor; these heaps were allowed to lie for months in summer weather, being shoveled over occasionally and kept sheltered from excess of rain, and finally they were leached out with water and the liquor evaporated. The resulting salt was nitrate of potash, the nitrogen of the humus of the soil and manure having been combined with the potash of the ashes, through the agency of these nitric organisms. Now, when we plow our stubble fields upon which wheat is to be sown, as early as possible after harvest, top dress them with manure and harrow it in, we have furnished just the conditions necessary to start the formation of saltpetre in the soil. To carry this work on to completion the fields should be reharrowed occasionally, in order to more evenly distribute the germs of nitrification, and to give more complete exposure to the oxygen of the air, just as the old niter beds were shoveled over at intervals, or just as the housewife kneads her dough two or three times, in order to distribute the yeast plant more uniformly throughout the mass.

Such treatment will start the formation of nitrates in the soil, and when the wheat is finally sown the young plants will find a store of plant food just ready for their use.

Again: In the culture of corn we are carrying on just the operations essential to the formation of nitrates in the soil, especially when the corn ground has been manured before planting. The cultivation goes on at intervals through the hot weather, giving the nitric organisms opportunity for their work between times, and as a result a crop of corn is able to gather up and store nearly twice as much nitrogen from an acre of ground as a crop of wheat. That is, we can raise about sixty bushels of corn to the acre in the average, on land that will produce twenty-five bushels of wheat, and the corn will contain nearly as much nitrogen to the bushel as the wheat.

But the formation of nitrates in the soil goes on for some time after the corn is taken off, and if the ground is left bare through the fall and winter much of this costly plant food will be lost. It is for this reason that farmers are looking for some crop which can be made to cover the ground during the winter months. Nature never permits ground to lie bare if she can have her way about it. If she has half a chance she will cover it with weeds at once, and the hint is one that we should profit by. She grows these weeds, however, not for the sake of their shade, but in order to catch, through their roots, the escaping nitrates of the soil, and hold them for future crops.

The common practice of following corn with wheat has sound philosophy in its support. This practice may not be adapted to all circumstances, but it is worth while to understand the operations which are going on in the soil, and to adapt our methods, as far as possible, to working in harmony with those operations.

Thus far I have been discussing the nature of soil fertility, and how to get it out of the soil most rapidly, which fay seem quite foreign to the idea of preserving it; but in fact there is an intimate connection between the two ideas, for as we the better understand the operations by which the fertility of the soil is made available, we the more clearly comprehend the methods which must be employed to presrve that fertility.

I have called attention to the measures which Nature takes to prevent the squandering of fertility through improvident husbandry. The man who undertakes to skin his land may succeed in getting a few paying crops, but long before the point of absolute sterility is reached the yield becomes so low that the land can only be cultivated at a loss. The old proverb, "You cannot eat your cake and have it too," does not hold good in this case, for the soil will not yield a full harvest until it has stored away ample supplies for another. For instance: In the great experiments at Rothamsted, by Lawes and Gilbert, wheat has been grown year after year on the same land, with various chemical fertilizers, with barnyard manure, and without any manure or fertilizer, for fifty years in succession. By heavy annual dressings of manure or fertilizers the average yield of some of the plots has been increased by more than twenty bushels per acre over the continuously unmanured plots; but in the best outcome from two to three pounds of nitrogen, from three to four pounds of potash and from four to five pounds of phosphoric acid have been applied in the manure or fertilizer for every pound of nitrogen, potash or phosphoric acid recovered in the increase of crop.

In our own experiments, where we use clover in rotation we sometimes get back as much nitrogen as we give, or even more, but that is because the clover adds nitrogen to the soil by its growth; but we still fail to recover more than about one-third of the phosphoric acid applied in the fertilizer. A bushel of corn or wheat, with its stover or straw, carries about half a pound of phosphoric acid and a pound of potash. When we buy phosphoric acid and potash in the fertilizer sack we pay from five to ten cents per pound for them. Now if we could get back a pound of each in our crop for every pound applied in fertilizer, and could get all our nitrogen free by growing clover, there would be encouragement to the attempt to maintain the fertility of our soils by the use of commercial fertilizers; but when we understand that we must apply in fertilizer three to five pounds of each of these constituents for every pound recovered in increase of crop the margin at once becomes very small, and will often disappear altogether.

There is an old fashioned notion, not altogether extinct, that the rational method of maintaining fertility is through the keeping of live stock. This notion has been very popular in England, so much so that in that free-trade country today nearly three times as many cattle and more than four times as many sheep are kept to the square mile as in Ohio, notwithstanding the assertion, which we so often hear, that Ohio could not keep a single sheep if it were not for the tariff on wool.

Under this system of husbandry the English farmer has increased his wheat yield from an average of ten or twelve bushels per acre two hundred years ago, to a present average of twenty-eight to thirty bushels; but in Ohio the idea is abroad in the land that there is an easier road to the maintenance of fertility than that which lies through the barnyard, and one county alone—Wayne—has reduced her live stock since 1870 by the equivalent of twelve thousand cattle, while she pays out annually forty thousand dollars for commercial fertilizers. But these twelve thousand cattle, properly handled, would have produced at least twice the actual fertility that has been bought with the forty housand dollars, and would have paid for care and feed besides.

I cannot enter here upon a discussion of methods of using fertilizers or manure. It is sufficient to call attention to the fact that exact experiments and the experience of our best farmers agree in showing that it is possible to so treat the soil that it shall not only pay us abundantly for our labor in immediate returns, but also increase in productiveness from year to year; whereas, if we undertake to rob it we shall reap the just reward of our iniquity.

Let us now briefly retrace the ground we have gone over. I have tried to show that the soil is a vast storehouse of potential food, accumulated there through past ages almost infinite in duration, by the action of rain and frost, of chemical action and vital growth; that these agencies are still at work, and that by understanding their nature and mode of action we may not only reap a larger harvest for ourselves but may at the same time transmit to posterity an undiminished store of soil fertility, whereas the result of a blind and unthinking agriculture must be in the end a meager return for ourselves and an impoverished legacy to our children. In doing this I have dwelt upon underlying principles, rather than upon methods of management, because if we understand clearly the *why* we do a thing, the *how* we do it becomes an altogether secondary question, one to be modified by each man's surroundings and conditions; to be changed, perhaps, to suit each season's variations of climate.

DIVERSIFIED VS. SPECIAL FARMING

By JOHN BEGG, Columbus Grove, O.

I am aware that there is not so much necessity for the discussion of this subject at a farmers' institute at this time as there was a year or two since. When the prices of our staple farm products began to fall a few years ago there was a great deal of speculation and conjecture among farmers as to the cause of the changed conditions which this decline in values indicated. And, while there was much difference of opinion on the subject, many well-meaning persons believed and declared that it was largely due to our methods of farming.

Said they, "We must change our methods, get out of the old ruts in which our fathers moved so long and adopt new methods entirely." In other words, "We must become specialists, each one selecting some favorite grain or live stock product and then develop it to its highest possible condition." This, they thought, would create an increased demand for their special products and enable them to procure much better prices than under the diversified plan. Many instances were cited to prove this theory where persons had started under the most adverse circumstances but by taking up some particular product and devoting all of their time and energies to that one thing had succeeded beyond their most sanguine expectations both in developing their business and in a financial way as well. But their success was due rather to their natural adaptation to the work in hand than to their manner of conducting it. I do not wish to be understood, however, as decrying the specialist who is fitted both by nature and environment for some particular work, for much if not all of our improvement in agriculture is due to the application of genius, skill, and industry, on the part of this most useful class of citizens. But we must also remember that all persons are not endowed by nature with the same talent neither are their circumstances such that their efforts to become specialists would prove successful. To become a successful specialist requires more means with which to operate than the average farmer can generally command, and I believe I am safe in saying that positive harm has resulted from farmers letting go their well established practices and adopting some new methods with which they are not familiar, simply because they have read or heard a highly colored statement concerning the operations of some agricultural or horticultural specialist, never thinking that they had neither the ability nor the conditions that would enable them to succeed as those whom they were trying to imitate.

Let us briefly notice a few of the reasons why the average farmer should practice diversified, rather than special, farming. First, our physical conditions are more favorable. We have a diversified soil and climate both of which contribute much toward making the former method of farming preferable. On many farms we have several different kinds of soil upon which may be grown a variety of farm products with equal degree of success at the same time. It also prevents loss from failure of crops much more than where we have "all our eggs in one basket," or at least it reduces the risk of loss in this way to the minimum. It is an obvious fact that in our climate and under our conditions we very rarely have a failure in *all* our farm crops in any one year. If our wheat fails we generally have the pleasure of harvesting a good corn crop the following fall, or if our corn is light, our hay, oats, or potatoes are first-class, or some of our live stock products will sell for good prices, so that even if one single crop does fail, as it frequently does, we have others with which to make good the deficiency. This is no small consideration with the average farmer for very few can afford to suffer the loss of one year's work without being much inconvenienced in their business, and it seems to me that this one feature alone would of itself be sufficient to justify us in recommending the culture of a variety of products upon our farms each year.

Again, it gives variety to the farmer's employment, besides enabling him to do a greater amount of the work himself. The fact that he can vary his employment relieves that monotony which renders any business or profession irksome and tiresome to those engaged in it. He plants and cultivates one kind of crop at one time and in a short time thereafter, or maybe as nearly at the same time as it is possible to do so, he will be harvesting a crop of another kind. This not only changes the form of his labor but it also enables him to perform more of that labor himself. This last is no small item during this period of low prices.

The farmer who raises mixed crops generally raises those which are less perishable than when adopting a specialty. This is not always so, nor is it necessarily so, and yet such crops as are raised in mixed farming are maturing at different seasons, so that the time of harvesting is not so limited.

Another feature attending mixed farming is, that it distributes the income more evenly throughout the year thus affording the farmer a steady income almost every month of the twelve. I imagine I hear some say that this would matter but little as almost any one with any talent for business can use his income as he needs it whether it was received all at one time or at several different times. I cannot entirely agree with this, for there are many persons endowed with the faculty or ability to make money who cannot hold it, and who would be tempted to dispose of it with too lavish a hand if they received it all at one time not realizing that each week of the fifty-two brings some demand for an outlay of money in every family. When a farmer's business is arranged as I have indicated, hardly a month will pass by but he will have something to sell that will bring in some money to supply the necessities of his family.

Again, it enables us to keep up our soil fertility more easily than where one special crop is grown. The mixed farmer has such a variety of crops each year grown upon his farm that he can and should keep different kinds of live stock to consume the products of the farm. This will of course necessitate the growing of grass for pasture and hay which along with his fodder, straw, etc., will furnish a large amount of barnyard fertilizer each year at a less cost than he can possibly procure it in any other way. If he were practicing almost any special line of farming his opportunities for securing fertility in this way would be much more limited and in some cases lost entirely.

Some may inquire how far this combination of agricultural products upon the same farm can be maintained with safety to the producer. My answer would be that this must be determined largely by the individual farmer's tastes and circumstances. Under ordinary conditions in my own part of the State I think almost any farmer can raise corn, wheat, oats, hay and potatoes for grain and vegetable products, and with these keep horses, cattle, sheep, hogs and poultry. The amount of each kind of grain and the number of each kind of live stock must be determined by his amount of land and his personal adaptation to the different kinds of work required in producing and caring for these various products. On our own farm of one hundred and sixty acres, we generally raise between forty and fifty acres of corn each year. This corn ground is nearly all sown in wheat in the fall and what is not sown in wheat is sown in oats the following spring. We then apply clover and timothy and, if successful in getting a catch of mixed grass, we pasture and mow and repeat the process the second or third year as the case may be. We also keep from six to eight horses, from three to five cows and as many stock cattle as our pasture will afford. We also have from twenty-five to fifty sheep, the number varying according to special conditions, never however being without a small flock of good grade ewes of the mutton breeds. We also raise from seventy-five to one hundred hogs each year and fatten them upon corn grown upon our own farm. By this method we seldom sell any rough feed from the farm but in more instances buy to finish what stock we keep on hand. This enables us also to return to the soil each year all the fertilizing material that can be made from the products grown upon the farm. We raise as much poultry as our room and skill will allow. We believe this can and should be made one of the features upon every farm where mixed farming is practiced, for much of the income derived from this product is from a source that would be practically lost without it. Besides, since our wild native birds are becoming exterminated I believe their place can be supplied in part at least by an increased amount of domestic poultry. The most of our fowls prey upon our agricultural insect enemies and by increasing their number we may reduce our losses from these annual pests besides getting well paid for their production at the end of the year.

I do not mention the products grown by us as a positive guide or rule for every one to follow, for, as stated in the beginning, we must vary our diversified products to suit our conditions and individual tastes and yet the same variety only in different ratios may be grown on almost any of our farms in this section with good success.

In conclusion I will say that for the several reasons given above, and for the reason also that the majority is not adapted to specialties in any business, I believe that more success and genuine prosperity will follow the practice of diversified farming than any other. I also believe that this is really the only practical method for the great mass of farmers to adopt at this time. This does not preclude however the improvement of our methods of work, nor the application of skill and study in all of our labor, for these are always as beneficial as they are necessary and will always be accompanied with good results when properly put in practice whether in diversified or special farming.

THE CULTIVATION OF MANURES.

By **Geo. E. Scott**, Mt. Pleasant, O.

It may appear strange to the reader that we use the term cultivation before the word manures. To us the word seems appropriate, inasmuch as our mode of making, saving and applying manures has materially changed from former years to a more carefully devised system. There should be just as much system in the creation of material for maintaining fertility in the soil as in other important features of farm industries.

The term cultivation as we understand it means that manures can be created and produced the same as crops from the soil and that they augment in the same proportion as the cultivation and fertility increase. The maintenance of soil fertility belongs to the farm that has been and is being continually under cultivation. Without rapid rotation soils cannot be made richer each year and the output of manures systematically increased.

Good farming consists of raising a good or better crop each successive year and at the same time leaving the land from which it is raised a little better than the year before. To do this takes a vast amount of thinking and reading, and years of practical field work. It does not come by chance any more than the crops themselves and the farmer who thinks that there is luck in farming wakes up to the fact that God helps him who helps himself.

Hundreds of farmers have realized, when taking up worn out farms, the great necessity of multiplying the manure crop as well as the other crops. Some years ago it was our plan to make manures and get them on the field as quickly as made. For that time the plan was all right and much good came of it, but later on the accumulation of straw became greater, so great that it became impossible to consume it through the stables as bedding. Under these conditions the stables were cleaned and the manures taken out of the barn and spread on six inches of straw to the depth of four to five inches, then well covered again with straw and young cattle fed hay on it till well tramped. This arrangement is kept up for some time until a favorable opportunity comes for hauling, when it is spread evenly upon clover turf for plowing under in the spring.

Where this work can be done in a covered yard many advantages accrue that cannot be obtained out of doors, yet little loss occurs where the work is properly done in the barnyard.

After over twenty years of farming, we have come to some very definite conclusions, among which is that fermented manures carry less actual fertility into the soil than do unfermented ones.

Slow combustion is but the same as rapid and ultimately brings the same results. With the raw material, with the liquids completely absorbed, we find that our soil shows great vivacity in responding to the care given it.

We prefer that chemical action shall take place within the soil and not in the air. In the former the gases are neutralized by the soil and new compounds formed ready for plant food and the humus spreads apart the inorganic particles, letting in air, heat and light, and the whole ground receives a leaven that cannot be obtained in any other way.

Commercial fertilizers in their places are all right and have proven to most of us a fruitful means of bridging over rough places in years gone by. Well do I remember when a complete formula was a necessity on our farm, but as multiplicity of home-made manures were annually returned to each cultivated acre the need of nitrogen and potash became reduced to a minimum, hence their near elimination.

This plan has greatly reduced the former expense of adding fertility, as the cost of phosphoric acid is much less than one-half the cost of nitrogen and in the most available form too.

Each ton of straw contains an elemental value of nearly two dollars and sixty cents, which price should prove conclusively to every farmer that he can ill afford to sell it from his farm. If that is not sufficient reason let him also consider the fact that it is worth as much more as an absorbent in retaining the liquid voidings of animals, which contain largely the nitrogenous element of food consumed and which if not provided with a carrier usually escape, leaving our soil greatly impoverished. And again the straw used in the soil acts in so many ways beneficial to it in a mechanical way. Its decay there breaks down both organic and inorganic tissue. Soils that have become solid and tenacious from lack of organic matter soon change in color and condition, taking on a darker hue and becoming friable and porous as well as more productive

One of our greatest sources of manures is the herd of swine fed on the farm. Where once nearly all of the refuse from feeding hogs was wasted we make tons upon tons of the very best manures.

Each ton of corn fed takes six dollars of value from the soil and each ton of bran and middlings about ten dollars, and to avoid this loss the swine are confined in yards where they are carefully bedded every few days. This is done during the fall and winter, after they are taken from pasture. This class of manure needs no care to prevent nitrification and is always in condition to apply to a clover turf.

Usually too many farmers allow their manure heaps to accumulate in cone shape with too little water in them for the straw, and nitrification sets in and the body of the mass burns away, resulting in little being left but the ash. This is a source of tremendous loss and few farms will endure such management many years with the heavy drainage of cropping still going on.

It is no wonder that hundreds of farms are sacrificed every year on a forced market when the management of them is taken into consideration; when tons of manure are wasted in the most wanton way and commercial fertilizers purchased at high prices to take its place, only to filch out more available fertility placed there by nature to be cared for and used in a common-sense way.

When farmers learn that they must study economic questions on the farm as well as in politics, we may expect to see greater success among the masses, and not till then.

The soil is our bank and we its cashiers, and all depends upon how its capital (its fertility) is handled and kept at interest. Show me the man who makes the care and management of his manurial supply the basis of his farm operations, and I will show the world a successful farmer. If careful and economical in the saving and making of manures he will likewise be the same in all his affairs on the farm. He comprehends the situation and believes that if there be money in the cultivation of crops there must necessarily be first the proper cultivation of his manure supply.

SOME NEWER CROPS THAT SUCCEED WITH ME.

By J. E. Wing, Mechanicsburg, O.

I do not believe that the farmers of Ohio have adopted nearly all the crops that they can profitably grow, or that in many cases they are now growing the crops that would pay them best. Take the average Ohio farm, there is a rotation somewhat like this: corn, perhaps one year, too often two or three years in succession; wheat, or oats followed by wheat; clover (if not again followed by wheat), and timothy. The timothy stands for an indefinite time and is plowed for corn again. In the days when timothy sold for a large price there was perhaps sufficient justification for this rotation. Yet it did not increase the fertility of the soil, it was well if it so much as maintained the fertility with the aid of all the manure that could be saved on the farm.

The objection to this rotation is, first, some farms do not produce wheat profitably; it is a very uncertain crop in many soils and upon many farms and may well be left to those having somewhat favorable conditions; and next, those farmers who are wise enough to feed the products of the farm on the farm do not have use for much timothy hay. There is surprisingly little feeding value in timothy hay. A little for the horses may be profitable, though even then bright shredded corn-fodder or oats hay is cheaper and better.

First of the newer crops I will put oats, sown to be cut as hay. With this crop I have had great success. I sow thinly, using on rich ground not more than a bushel to the acre, sometimes much less than that. The ground is always well fitted either with the plow or disc harrow. After the oats are sown I always sow either red clover or alfalfa, or sometimes a mixture of the two, using two parts of alfalfa to one of red clover. I roll the ground thoroughly after sowing the clover seed. Sometimes I am especially anxious to get a catch of clover and alfalfa on the land. Then I wait until the oats are abount six or eight inches high and turn the sheep in. They graze off the oats and firm the land with their feet and pack it about the young clover plants. As soon as the oats are well eaten down the sheep are taken out and the oats allowed to grow until in bloom. They are now cut close to the ground and made into hay as clover or any grass would be made. It is surprising how the clover thrives when treated in this way. It will very often make a crop the same year that it is sown. This crop may be mown off with no damage to the next year's crop, but with advantage, although it should not be mown too late in the season. Cutting the oats when in bloom secures them when they are most palatable and useful as hay. The yield is liable to be heavy if the land is good, and the hay is relished by all classes of stock. I am sure that it is generally more profitable than to save the crop and cut it for grain, especially if the land is rich and the oats liable to lodge. The early cutting of the oats relieves the young clover and alfalfa of the competition which is going on for soil moisture and insures a catch.

BEARDLESS BARLEY.

I think this barley a profitable crop to grow, especially on rich soils. It is not a thin soil crop. It should be sown early in spring on well plowed and well fitted land, sowing about two bushels per acre. I sow clover or alfalfa right after the drill and roll to cover the seed. The crop ripens early. It shades the land less than oats, and clovers seem to catch well with it. The yield with me has been from thirty to seventy-five bushels per acre. I should think a yield of forty bushels satisfactory, although much more can doubtless be grown. It does not lodge in rich, black soils. The feeding value of beardless barley is about the same as oats; it is a food rich in protein and adapted to making growth in young animals and for feeding to milk cows, sows and ewes. I do not think the farmer can often afford to sell his barley crop when he has stock to feed it to. I am sure that it is better for the community to make it into milk than into beer. I believe that seeding of either clover or alfalfa with barley is safer than with any grain crop with which I am acquainted.

ALFALFA.

After eight years' experience in growing alfalfa in Ohio I am more in love with it than ever. Yet I feel the necessity of cautioning farmers that it is not a crop that they can grow as they do clover or timothy. It requires special attention and special soils. I cut in 1898 from about forty-five acres nearly two hundred tons of alfalfa hay. I fed this hay to ewes and lambs, horses and cows, pigs and poultry. All animals are very fond of alfalfa. As it is very rich in protein, it is especially valuable to all growing animals as well as all animals giving milk. I have cut down the cost of producing lamb mutton by feeding only corn and alfalfa, the products of my own soil, to an average of three dollars and fifty cents per hundred pounds. When I was trying to feed lambs on timothy and corn, with protein bought at the mills, the cost was above six cents per pound.

I am quite certain that no other crop pays so well on Woodland Farm as the alfalfa. I am sure that more pounds of beef, mutton or milk will come from an acre of good alfalfa than from an acre of corn or any other crop whatever. With me it seems to last as long as I keep stock off of it in freezing weather. The soil must, of course, be dry naturally or else well drained. I will quote from an article of mine to the Ohio Farmer:

"The Ohio climate is all right for alfalfa. It thrives in Canada north of Lake Erie, if given suitable soil and culture. It thrives south to the Gulf.

Alfalfa loves a deep, rich soil. It thrives best in a soil with plenty of lime in it. Most Ohio soils are well supplied with lime. Not a large portion of Ohio soils are naturally fertile enough to produce first-class alfalfa.

Soil rich enough to yield fair crops of clover may fail to produce good alfalfa. It must be enriched with stable manure or other fertilizer to a condition of more than average fertility. The better the soil the better the alfalfa, and no plant is capable of returning more generously to the farmer.

The subsoil must not contain standing water within three or four feet of the surface. If not naturally well drained, tile must be laid. On rich, well drained soils the yield is very great, far exceeding in digestible nutrients the yield of corn, clover or other crops.

It may be mowed very early in spring, usually (in latitude 40 degrees), by

May 15th to 20th, and is the best plant known for a soiling crop. After the first cutting it should be cut at intervals of thirty days.

It should always be cut as soon as bloom has appeared. It soon becomes woody if allowed to stand after this time.

When its leaves turn yellow or gray at any stage of growth it must be mowed at once and as close to the root as possible. It will then start quickly into vigorous growth, whereas if not cut it will shed its leaves and remain for a long time in unthrifty condition. The reason for this habit of alfalfa is unknown. It appears most often in young alfalfa fields.

Alfalfa should not be pastured the first year. It is not generally safe pasture for sheep or cows, its succulent nature causing bloat. This is, however, more dangerous during periods of rapid growth than during drouths.

For hog and horse pasture it is the best plant known. Chickens are very fond of it green or dry and pigs thrive on its dry hay.

Three crops of it and a great deal of pasture during September and October may be counted on in Ohio (latitude 40 degrees).

The soil on which alfalfa is to be sown should be plowed early and deeply. It should be fitted as carefully as though to be planted to corn,

After danger from hard frosts is over oats may be drilled in, not more than one bushel to the acre (three-fourths bushel is better) and the alfalfa sown on the freshly drilled soil at the rate of fifteen pounds per acre. Cover by rolling and let the roller be well weighted. I use a roller six feet long, weighing two thousand two hundred pounds.

When the oats are in bloom mow them down for hay. Cut close to the ground. If unable to cut when in bloom cut earlier. Clip the alfalfa once or twice after this to destroy weeds and stimulate the growth. Always set the mower as close to the ground as possible.

If the land is foul with weed seeds harrow and roll early and allow the weeds to start. When they have shown destroy them by very careful harrowing, taking care not to stir the land deep enough to bring up many fresh seeds. Now roll again. Destroy the second crop of weeds in like manner and then sow the alfalfa seed and roll it in. Weeds are a great damage to young alfalfa. After the first year they will not trouble it much, not any if the stand is good. Alfalfa sown alone generally does best. It will fail if sown on wheat as clover is sown. Alfalfa does not form seed well in Ohio, but the seed is a staple article of commerce and should not cost more than clover averages. Western seed is best and there is little else on the market.

Alfalfa improves the soil as red clover does, but in greater degree. Yet it will not improve a worn-out soil, because it will not grow there.

Alfalfa yields little the first year, a ton to the acre being a good amount. It yields more than clover the second year and is in its prime the third season. Little change is noticed the fourth and fifth years; it will endure in good condition for six to twelve years, depending much on the treatment given it. It must not be pastured in winter."

Also the following from Hoards' Dairyman:

"Mr. F. E. Dawley, superintendent of Farmers' Institutes in New York, informed us, while on a recent visit to that state, that fully one-half, if not more. of the hay harvested in his township, Fayetteville, Onondaga county, and the adjoining township of Sullivan, Madison county, the past year, was alfalfa. Central New York farmers are coming to regard alfalfa with great favor, especially where cows are kept. It seemed almost like attending an institute in Colorado or Washington to hear the farmers discussing the alfalfa question as they did. We venture the assertion that in ten years it will be found on nearly every dairy farm from the Pacific to the Atlantic."

RAPE.

Dwarf Essex rape is one of the good things that can be had for nothing. I sow it in the corn at the time of last cultivation, using about four pounds of seed to the acre. It comes along well before the corn is cut, if it is not too dry a season, and after the ripening of the corn it is there and growing. Some seasons it covers the land and stands two feet high in the corn stubble. I have estimated that it was worth at least two dollars per acre as sheep pasture. I can turn in the lambs before the corn is cut and the ewes after the corn has been hauled to the husking machine, or has been husked by hand, as they will not trouble the fodder when the rape is at hand.

Rape may be grazed until Christmas most years, as it is much like cabbage in its ability to resist freezing. It should never be turned onto while the leaves are frozen, as that destroys the life of the leaf. It soon decays if bent when frozen. Lambs may be fattened on rape for the market, but it is better to feed oats or corn along with it. There is small danger of lambs bloating on rape, as they learn to eat it slowly; however after they know how good it is they must not be allowed to get too hungry for it or they may eat too much of it. It is well to have another pasture of grass of some sort on which they may run, as the rape supplies too much succulence for their appetites and they like a change.

Chickens relish rape and it may be sown in drills in the garden for their use. It is relished by dairy cows, and although it causes the milk to taste as cabbages do, yet it may be fed just after milking with no ill results, the taste disappearing before another milking time.

For feeding to tide over the dry season rape may be sown in April or May. It should have rich ground.

WHEAT.

By J. L. ROUDEBUSH, Stonelick, O.

Wheat, where the soil and climate are adapted to its growth, and requisite attention paid to its cultivation, is decidedly preferred to all other grain, and next to corn is the most important crop in the United States, not only on account of its general use for bread, but for its safety and convenience for exportation, which has been one hundred million bushels, annually, since 1870, and two hundred and forty-seven million bushels in 1897-8.

To what country it is indigenous, or where first cultivated, we are unable to say, but are of the opinion that it was grown by the Egyptians at least 1600 B. C. It has ever followed in the wake of civilization, thus fitly representing the staff of life.

A slave of Cortez took it with him to Mexico in 1530, and carefully cultivated it. Its introduction into Peru about the same time by a Spanish lady, Maria de Escobar, made her the patron saint of the Inca farmers.

To Gosnold belongs the honor of first sowing it within the present limits of the United States. This was in the year 1602, on Elizabeth Island, now a part of Massachusetts, when he was exploring the New England coast and five years before the settlement of Jamestown. In 1611 it was introduced into Virginia. In 1651 premiums were offered as an encouragement for its cultivation, which at this time amounted to about five thousand acres, with no increase for many years on account of the general cultivation of tobacco, the Virginia farmers not knowing that it did its best in rotation with this crop. Massachusetts Bay ordered wheat from England in 1629. In 1718 it was introduced into the valley of the

Mississippi by the Western Company. In 1750 the French in Illinois exported over two thousand barrels of flour. After the Revolution wheat growing became quite profitable in the Genesee country, in western New York, and the Shenandoah Valley in Virginia. It was in the latter that Cyrus McCormick in 1831 made a field trial with his recently invented harvester, the first in the world. At that period the Siberian was the variety mostly cultivated. After it came the old Red Chaff, followed by the Blue Stem and Mediterranean of our boyhood days.

The following tables give the production and exportation of wheat for every tenth year during the past hundred years. In addition is noted the export for 1846, which was largely in excess of that for several years following.

PRODUCTION.

In 1790	we produced	17,000,000	bushels.
" 1800	"	23,000,000	"
" 1810	"	27,000,000	"
" 1820	"	41,000,000	"
" 1830	"	62,000,000	"
" 1840	"	84,000,000	"
" 1850	"	100,000,000	"
" 1860	"	170,000,000	"
" 1870	"	248,000,000	"
" 1880	"	498,000,000	"
" 1890	"	399,000,000	"

EXPORTS.

In 1790	we exported	in wheat	and flour over	5,000,000	bushels.
" 1800	"	"	"	4,000,000	"
" 1810	"	"	"	11,000,000	"
" 1820	"	"	"	6,000,000	"
" 1830	"	"	"	10,500,000	"
" 1840	"	"	"	12,000,000	"
" 1846	"	"	"	26,000,000	"
" 1850	"	"	"	6,000,000	"
" 1860	"	"	"	14,000,000	"
" 1870	"	"	"	69,000,000	"
" 1880	"	"	"	113,000,000	"
" 1890	"	"	"	106,000,000	"

We have now sketched its early history, introduction and successful cultivation, production and exportation of the United States. Until after the Crimean war, the export of wheat was chiefly from the sea-board States, but with the settlement of the vast territory beyond the Mississippi, where large areas have been exclusively devoted to wheat, together with our vast system of railroad transportation, Chicago, not Baltimore, has become the wheat center of the world.

Wheat delights in a rich, but well fined and firmed soil, well drained naturally or artificially. As a site, we prefer: First, tobacco or early potato ground; second, oats stubble plowed early; third, corn stubble. Wheat is a great feeder of nitrogen, hence tobacco or potato ground, that has been shaded and cultivated late, or land broken early and stirred often gives better results than that recently plowed and not firmed, as this shade and frequent cultivation or stirring promotes nitrification and the plant grows from the sowing vigorously, going into the winter in good condition.

Again, tobacco and potatoes do not require so much nitrogen, hence wheat is their complement. We never sow until the soil, to the depth of three inches, is fined and firmed; if clods there must be, let them be on top. To do this sometimes requires the use of all the various implements for such purposes. On alluvial soils we sometimes top-dress limited areas with well-rotted stable manure; on uplands we invariably use a complete commercial fertilizer at the rate of two hundred pounds to the acre.

If conditions are favorable we begin sowing by September 25, but of late years, on corn stubble and potato ground, have sown as late as November 5 with good results. By sowing about October 1 in this latitude (Cincinnati) we generally escape the ravages of the Hessian fly and chinch bug. We drill at the rate of five pecks to the acre on alluvial, and six pecks on clay soils. We want our seed to be clean; for what you sow, that you will reap. Wheat does not turn to cheat in southern Ohio. As to varieties, we like the Poole, White Fultz, and Egyptian; there is but little difference in yield. We cut as soon as grain is out of the dough with a self binder, making a medium sized bundle, with twelve to a shock. Thresh out of shock as soon as possible, putting wheat on floor over bins until danger of heating has passed. With us wheat is a part of our rotation, invariably following tobacco, potatoes, and sometimes corn. We prefer it as a seed bed for clover and timothy to any of the other small grains

We have never had the great yields of our upland neighbors, though our average for a decade has been twenty-two bushels per acre of grain and eighteen hundred pounds of straw, and to produce has cost us forty-five cents per bushel on tobacco and potato ground and fifty cents on corn ground.

With Argentine no longer a competitor and Russian Siberia only a possibility in the markets of the world, we are of the opinion that the Ohio farmer, with intelligent effort in way of better methods, better seed and seeding, harvesting and selling, will find wheat raising pleasant and profitable whether a part of his rotation or not.

ASPARAGUS.

By A. Shirer, Dayton, O.

There is perhaps no vegetable that is as profitable to the general farmer, or even the market gardener as asparagus considering the amount of labor required to produce it.

The asparagus is a perennial. Not a perennial that lasts only five years but one which, under proper treatment, may be profitable for twenty-five or even fifty years.

I am unable to say on what kind of soil asparagus gives the best results. I have seen it thrive on both sandy soil and heavy clay. Good wheat land is certainly an ideal asparagus soil, while some good corn land may be too wet and cold during March and April for its growth. However, no matter what soil we select plenty of stable manure is absolutely necessary to produce a heavy crop.

Apply a heavy dressing of good stable manure. Plow as deep as possible. If it is sod this plowing should be done in early fall. Replow in the spring.

For the family the ideal patch is planted in a single row. For the market gardener there are two methods, the close and shallow planting and the opposite, wide and deep planting.

One year old plants may do fairly well but generally two year old plants are preferable. Sometimes asparagus seed is very slow in sprouting; soaking the seed in warm water before sowing may hasten germination.

Having the soil in good condition and the plants ready, how shall we proceed to plant? For a permanent bed four feet by three feet is plenty close enough. We must remember that the asparagus plant after it is several years old has an immense root system.

When the soil is deep enough the crowns of the plants should be from four to six inches under the ground. Deep planting has its advantages and its disadvantages. The whole surface of deep planted patches can be thoroughly cultivated in the spring and fall. The first asparagus in the spring will appear a little later on deep planted beds but at the same time it is less liable to be injured by severe freezes during March and April. If we desire very early asparagus and the heaviest yield from a small space we should plant shallow and close. Such patches will soon become unprofitable.

There are two distinct varieties—the green and the white. Which is the better depends considerably upon the fancy of the consumer. They are both good.

There are two methods adopted in gathering asparagus. One is to cut the shoots off under the surface and the other is to allow it to grow taller and cut or break it off above the surface.

Is salt absolutely necessary to grow asparagus? There is less salt used now than formerly. We can kill many weeds by a heavy application of salt but no doubt the better plan is to use more stable manure and give frequent cultivation. Unmolested weeds will thrive wonderfully in an asparagus plantation

What a blessing it would be if we could get plants that would ripen no seed. If it is true that asparagus is diœcious — that some plants are pistillate and others staminate — then by careful selection in the plant bed we may perhaps procure plants that ripen no seed. I am making an experiment in this direction in a new bed for the coming spring. Until we arrive at that happy condition, however, all the seedlings should be removed. If they are allowed to grow we soon have a mass of plants and very little asparagus to gather.

In the fall the tops should be mowed off and burned. Then, as stated before, give the whole surface a complete cultivation and mulch with good stable manure.

Asparagus in Ohio is comparatively free from both insects and disease. The leopard-spot fungus is however making some headway, causing the plants to die prematurely. In Maryland and adjacent districts the asparagus rust is playing havoc. No sure remedy has yet been discovered for leopard-spot or rust.

If the patch is going to be for permanent use do not begin to cut from it until the third year from planting. Cease cutting about the time raspberries begin to ripen.

To recapitulate: Select a well drained soil. Use stable manure freely. Plant deep and early in the spring. Give the plants plenty of room. Keep the weeds down by thorough cultivation. In the fall cut off the tops and burn them. In the fall and early spring give the whole surface shallow cultivation. Mulch the whole surface in the fall with rich stable manure. Treat the seedlings as weeds.

THE SELECTION, FEEDING AND CARE OF THE FARM HORSE.

By W. W. Farnsworth, Waterville, O.

The depreciation in value of the horse as a commercial product, has been so great during the past decade that farmers have largely lost interest in this faithful servant of man. And yet the horse is just as important a factor in the economy of the farm now as ever. In fact the continually increasing use of horse-power machinery on the farm makes it absolutely essential that the farmer possess a good efficient team to properly operate said machinery.

No matter how thoroughly his land is drained and fertilized, nor how carefully his stock, seed and tools are selected, unless he has a capable team to operate those tools, to properly fit the soil and sow the seed and harvest and market the crop, he can not attain the highest degree of success.

In the selection of the horse let us look first at his head. A good head on a horse is just as important as on a human being, and a "fool horse" is just as worthless as a "fool human."

The head indicates disposition. Select a horse of at least moderate width between the eyes as such a one is less liable to be timid and shy at every strange object. The eye should be full and bright and indicate neither a sleepy nor a vicious disposition. So much of the farmer's work is in connection with his team that it behooves him to secure a team that has the proper disposition to be pleasant, as his own work will not only be much pleasanter and easier but also more effective.

Avoid the nervous, fretful horse that is continually chafing and fretting and wearing out himself and driver, and also the slow, sluggish horse whose driver is obliged to "work his passage" with the whip. Select the horse whose head is carried well up naturally and then you will not need to rein him up in an unnatural position.

The neck should taper gradually from shoulder to head. The breasts not excessively broad, unless you are selecting for draft regardless of action.

The farm horse surely requires plenty of lung room but let him secure part of it by greater depth from withers to lower front point of shoulders (which gives action also) rather than by excessive width.

The back should be short and not sunken and the loins full and high, and by all means see that he is "well ribbed up", that is, that there is but little space between the point of hip and the ribs. This adds much to the appearance of the horse (especially when thin in flesh) and is an indication of an easy keeper.

The legs and feet are very important points to consider, especially if the horse is to be used much on the road. The leg should taper gradually from shoulder or hip to foot, and be broad, flat, clean and bony. The strain upon the leg is in a forward direction when the horse is working or traveling and we secure the greatest strength in that direction from a given amount of material by using that material in a wide, thin form, just as a piece of timber two inches thick and twelve inches wide set on edge will sustain a greater weight than one four by six which contains the same amount of material.

The foot should be of medium size and neither so flat as to cause lameness when driven much on hard roads, nor so narrow as to be likely to contract and pinch the inner and sensitive part of the foot and cause lameness also. Having secured a horse with sound feet, keep them sound by proper care and shoeing.

Shoeing may be said to be a necessary evil in most cases, but many farm horses can by careful management be used with very little shoeing.

The shoe is placed under the outer rim or supporting shell of the foot and if allowed to remain too long the hoof grows out beyond it and the shoe presses upon the softer, inner portion causing corns and lameness. Do not allow your blacksmith to cut, carve, burn and rasp too much, the less the better.

FEEDING.

Undoubtedly the greatest mistake made by the farmers of this country in feeding the horse, is in using too much hay. We are proverbially generous and we feel that our faithful co-laborer in our daily toil, ought to have all he can eat, so we stuff the manger with hay and if perchance we happen to visit the barn in the forenoon or afternoon when "Jim" is in the barn and he whinnies a grateful greeting to us we imagine that he is hungry and throw in some more. "Jim" is somewhat surprised but he does not want to hurt your feelings by refusing your mistaken kindness, so he eats it.

How many pounds of hay are you feeding your horses per day? Dr. Charles D. Michener of the New York College of Veterinary Surgeons says:

"The average horse getting grain should be allowed ten to twelve pounds of good hay per day."

Prof. Thomas F. Hunt, Dean of the College of Agriculture and Domestic Science at the Ohio State University says:

"The amount of hay that individual horses will eat, will of course vary considerably but it may be stated that on an average a twelve hundred pound horse receiving twelve to fifteen pounds of grain daily will eat from ten to twelve pounds of hay."

I usually feed about this amount when my horses are working hard and receiving full feeds of grain, but when idle and receiving less grain I increase the amount of hay twenty-five to forty per cent.

Clover hay has been condemned by many as not being fit to feed to horses, and there are three reasons for this: 1st. It is sometimes dusty. 2nd. Horses like it so well when well made that they overeat if allowed all they want of it. 3rd. It is a little more heating than timothy, hence not quite so well adapted for fast work in hot weather. The first two objections can be overcome by careful curing and judicious feeding and the third does not apply to the farm horse except perhaps during midsummer. At other seasons I consider good clover hay, or mixed hay properly made and properly fed, the ideal "rough feed." Corn fodder if secured in barn or stacks as soon as cured in the fall is also excellent for horses.

When straw is plenty, and hay is higher in price relatively than grain, straw can be fed with good results by increasing the grain ration.

I presume no one will deny that oats are the ideal grain for the horse. An Englishman once said to his Scotch companion that "Oats were a grain fed in England to horses and in Scotland to men." "Aye, mon," retorted the Scot, "and what horses they have in England and what men in Scotland!"

In most sections of America, however, "Corn is king", and the same amount of nutriment can be more cheaply produced in corn than in any other grain, so that while corn is not usually the best grain it is to a certain extent the cheapest and most convenient, and if properly used will in most cases produce fairly good results. If plenty of straw and clover hay is fed in connection with it the results will be better.

Give the horse a variety of foods. If one of us were allowed to select our favorite dish and then obliged to sit down to that dish alone three times a day for three hundred and sixty-five days in the year, I think we would soon be tempted to change our boarding place or obtain a divorce. The horse will relish an occasional change in his food (not a violent change) and will thrive better therefor.

During the winter my idle horses are fed clover hay in the barn at night and two or three ears of corn and two quarts of wheat bran. In the morning they are given the same hay and corn and about nine o'clock watered, and if the day is pleasant they are turned out into a large yard sheltered by an evergreen windbreak, where they can exercise during the day. At noon they are fed corn fodder in the yard.

It is a serious mistake to allow the horse to stand idle in the barn all winter, especially on a plank floor and tied up in a narrow stall.

It may do for cows but the horse is valued for his bone, wind and muscle, and to develop and preserve these he must have exercise. The dairymen long ago recognized the fact that to secure best results from their animals they must make them comfortable and the horse is no exception to this rule. He is just as finely organized and appreciates proper treatment just as much and will repay you just as well.

Let us arrange our stables with a view to convenience and also with an eye to the horse's comfort. Box stalls are by far the best. To be sure they occupy more space but the hard-working team deserves it. Even if your stables are full in the winter can you not throw two stalls into one during the summer when part of the stock is at pasture and allow the horse a little more room in which to rest? Ten feet is a good width and twelve or fourteen feet including manger is long enough. An earth floor is the best and let it be filled up higher than the ground around it and be dry and well drained.

Have plenty of windows. Plants and animals thrive better in the sunshine, and it is much pleasanter working in a light stable. Make the stall door in two parts so that the upper one can be left open in warm weather. Let the horse reach *down* to a manger for his food rather than *up* to a rack. Have a box in each stall filled with salt and ashes where the horse can help himself whenever he wishes. I would not care to eat my salt in weekly instalments, and I do not believe it is the proper thing for the horse to be obliged to do so.

In warm weather our horses are watered the first thing in the morning. They are then fed a small amount of hay, the stable cleaned out, the horse cleaned off, harnessed and fed about three to four quarts of chop feed, consisting of equal parts corn and oats ground together and fed dry. He is given water again when going out to work (he will drink but a trifle) and again about the middle of the forenoon. Then when brought in at noon he can have all the water he wants unless unusually warm. He is given what hay he will eat up clean while the teamster eats his dinner and immediately after dinner is fed four quarts of oats. When taken out to work he is given what little water he will drink and again about the middle of the afternoon. By this method we avoid giving a large amount of water at any time and especially immediately after feeding grain. This is highly important.

When the horse is brought to the barn at six o'clock he is unharnessed, watered and turned loose in the box stall to rest, eat, drink and be merry, for to-morrow he — works.

Frequently the horse will roll, and if he is not accustomed to a box stall he may roll up against the side and get fast. Watch for this the first few times and be prepared for it. One or two lessons will teach him to look out for it and roll without getting fast.

When put in the stall at six o'clock the horse is given the largest feed of hay of the day. After the teamster has finished his supper and the horse has cooled and rested, he is taken out and sponged off in water pumped at noon and stood in the sun. Take special pains to sponge off neck and shoulders to remove all grit, dirt, feverishness, etc. This is easier, quicker and better than cleaning with a brush and comb and refreshes the horse more. It is just as beneficial to the horse as is the driver's bath to him.

After the sponging the horse is returned to the stall, well bedded and given three to four quarts of chop feed and a little bran. The rule being to feed as much bran to the horses, the year round, as we can without producing too loose a condition of the bowels.

Now as to pasturing horses at night. I do not believe in making a horse work all day for me and then turning him out onto some rocky hillside or barren sheep pasture to work all night to secure his supper. But if your pasture is such that he can soon fill himself and then lie down at his ease it is a very good treatment for horses that are not to be driven rapidly.

Do not fatten the horse too much during the idleness of winter but keep him in a thrifty condition. Do not feed too much grain as carrots are an excellent food for the horse in early spring. They give an appetite and cleanse the system and put it fine shape to be built up by grain and exercise which should precede spring work.

I believe more horses are injured in the first two weeks of spring work than in any other month of the year. They are fresh and soft and the driver is fresh and anxious to get his oats in early. The ground is heavy and soft and they have all the "snap" taken out of them in the beginning. Begin gradually. Take a week or two to "season" them before trying to do a full day's work and you will gain by it before the close of the season. Sponge their shoulders every night with a strong tea of white oak bark.

See that the harness is repaired and oiled before beginning spring operations. It will last enough longer to pay for oiling. It will look better, and it will be more comfortable for the horse and comfort for the horse means comfort and dollars and cents for the owner.

Then see not only that the harness is properly adjusted to the horse in the spring but see that it is kept adjusted as the horse gains or loses flesh.

If you use blinders on the bridle see that they are not loose and flopping back and forth at every step, striking or threatening to strike the horse in the eye. See that the side pieces are of the proper length to keep the bit in the right place in the mouth and that the bit is smooth and easy and does not cut, pinch or chafe the mouth. See that the belts are doing their work properly. Have the collar just loose enough so the open hand can be passed between it and the neck of the horse.

Too tight a collar chafes and pinches, and too large a one slips back and forth and chafes the shoulder. Use the same principles you would in fitting a boot to your foot. See that the hames are so adjusted that the tugs will not be low enough to throw an undue proportion of the draft on the point of the shoulders and make them sore nor so high as to interfere with ease of draft. See that the back band and girth are of the right length so the tugs or traces may form a straight line from where they are attached to the hames to the singletree, whether high or low.

Use the voice more in driving the horse and do not depend entirely upon the lines; sometimes the lines are not in reach.

Give the horse a good share of his education in the stable. It pays to treat him well as regards food, care and stabling both from a humane and mercenary standpoint.

Encourage the boys to take an interest in the team and its care and furnish them a team and harness which they need not be ashamed of and they will be more contented with their work and with farming in general and much more likely to take care of team and tools.

COOKING FOOD FOR STOCK.

By J. Al. Dobie, Gutman, O.

If the theory is advanced in a farmers' institute that it pays to cook food for stock, some man is sure to maintain that the experiment stations and agricultural colleges have tested the matter and, with scarcely an exception, have found that there is nothing in it, and this is true. But someone else is just as sure to declare that the best practical feeders who ever lived have also tested the matter and found that it pays largely. And this, also, is true. Each one is sure he is right, and will not listen with unbiased mind to anything that may be said against his preconceived notions.

Let us examine this question with fairness and without prejudice, and try to get at the truth of the matter as nearly as we can. It can do no harm and it may do good. Let us first notice some of the evidence against the practice.

Quite a number of the experiment stations and agricultural colleges have experimented in cooking food for hogs, and with scarcely an exception have found that it does not pay. All of these experiments cannot be cited here, but only the ones most often quoted by those who look with disfavor upon the practice, as a "reason for the faith that lieth within them." The limits of this paper will not admit of details, only results can be given. Perhaps the simplest way to present it to the reader would be in tabulated form as given below. In each case one hundred represents the value of raw food, and the figures in the first column represent the value of cooked food:

Iowa Agricultural College	82	100
Wisconsin Experiment Station	86	100
Ontario Agricultural College	85	100
Michigan Agricultural College	102	100
Kansas Agricultural College	84	100
Maine Agricultural College	83	100

These experiments were nearly all with whole corn, which is the most common food for hogs. The results from cooking other foods are about the same.

Now, here are just such results as we should expect from these institutions. Notice how uniform they are, excepting the one in Michigan, and in that case the food was corn meal, not really cooked, but merely scalded and compared with the raw, wet meal. At these institutions there is every facility for careful experimental work, and it would be surprising if the results were not about the same. The men in charge are scientific, honest and truthful. They have no axes to grind. If we are honestly seeking after the truth it will not aid our purpose to ridicule the reports of their work, and sneer at them as "book farmers," "theorists" and "college professors." It is but fair to remark that they are generally men distinguished for their hard common sense, and many of them have a thorough practical knowledge of the every-day business of farm life.

Taking this evidence, and much more of the same kind that might be given, at its face value, it is a very formidable showing against the profit of cooking food. Every experiment save that of Michigan shows a serious loss resulting from cooking. And if scalding meal enhances its value only two per cent, as noted above, there is no profit in it.

But we are too apt to read one side of a question only, to jump at conclusions, and then hasten to enlighten the rest of mankind. We are too apt to read some of these bulletins from the experiment stations, and with scarcely a thought as to whether they are practical or not, we settle down to the conclusion that there is no pleasure, no profit, no "nothin" in cooking food for stock. However, some of these experiments are open to grave objections when viewed from the standpoint of the practical feeder. We will notice these later on.

Let us now examine some of the experiments of those who have satisfied themselves that it pays to cook food. But few of the many experiments by practical feeders can be given for want of space, but those selected are the ones generally quoted in favor of cooking food, as we did those that are usually offered as proof against it. These experiments also were nearly all with whole corn.

Again let the value of raw food be represented by 100, as shown in the second column, and the relative value of cooked food by the figures in the first column:

Thomas Wood, Pennsylvania	133	100
Prof. Wilkinson, Maryland	133	100
U. H. Stow, Indiana	150	100
E. W. Stuart, New York	150	100
Joseph Sullivant, Ohio	160	100
Hon. Geo. Geddes, New York	200	100
S. H. Clay, Kentucky	250	100
Prof. Mapes, American Institute	250	100
G. A. Moore, New York	300	100
Mr. Mason, New Jersey	300	100

Here again we have just such results as we should expect from these practical feeders, most of whom are farmers. Do you notice the difference in their conclusions? If we are to believe those at the head of the list, cooking food only increases its value about one–third. Those at the bottom would have us believe that cooked food is worth three times as much as raw. I have never heard the honesty of one of these men questioned. But they are not all scientific men, and some, perhaps, had not the facilities for careful experimental work, and it would be surprising if there were not some difference in the results of their investigations.

It will not aid us in our honest effort to sift the truth, to sneer at these men as "hayseeds" and say they were not competent, for they were. E. W. Stuart, the author of "Feeding Animals," is a standard authority on all things pertaining to stock feeding. Joseph Sullivant was both scientific and practical, and was at one time one of Ohio's great lights in agriculture, and there are others on the list scarcely less noted.

So, we have one set of gentlemen at the head of the experiment stations and agricultural colleges whose ability and honesty are beyond all question, who have tested this matter and have found that it does not pay to cook food for stock. On the other hand we have these intelligent, practical feeders, whose honesty no sane man will doubt, who have tested it to *their* satisfaction, and have found that it *does* pay. What are we going to do about it?

One of the main causes of difference is the sudden changing from raw to cooked food and vice versa, instead of making the change gradual. The experiment station concludes to test this matter of cooking food for stock, lays out the work, and makes up the pens. To one lot is fed raw food, the same as it always has had. The other is given cooked food for the first time. Now, every farmer knows that animals, especially hogs, do not take kindly to these sudden changes in diet. Is it any wonder that this experiment shows that cooking food injures its feeding value?

On the other hand, the practical feeder who has fed cooked food almost exclusively for years, hears his methods assailed, and he also concludes to test the matter to see if he is getting pay for the extra work and expense. To one lot the usual cooked food is given, and the other is changed to raw feed with a suddenness that is astounding to the pig. Is it any wonder that he finds that cooked food is worth two or three times as much as raw?

A friend who lived some miles away, once drove to our house to stay over night. In the morning he was examining the boiled corn in our cooker. I advised him to feed his horse raw corn, as she was not used to cooked feed and would not eat it. "Yes she will," he said; "that's good enough for anything. If she won't eat that, let her go without."

She was fed boiled corn. After he had gone we found she had eaten but little of it. At noon we turned a young mare into the same stall. To test her, we threw in three ears of raw corn with the other. Returning in a little while we found her rooting the cobs and three raw ears about to see if there was not one more grain of boiled corn she could get before commencing on the raw. The raw ears were then put in with a basket of boiled corn and fed to the hogs. Going back in half an hour or so I found them cleaning up the boiled corn, while the three raw ears were only nibbled.

Now, if my friend and myself had reported these experiments, his would have been that boiled corn is not a fit feed for horses, as they will only eat the stuff when starved to it. Mine would have been that neither hogs nor horses will eat raw corn at all as long as they can get a grain of the boiled. Perhaps each would have been giving the truth as he believed it. The same process has been followed by the most of those who have experimented along this line.

Another reason for the widely different results in feeding cooked grain, by the scientists and the practical feeders, is the different degrees of softness to which it is reduced before being fed. The rule at most of the experiment stations has been to cook until the grain could be mashed between the thumb and finger. Stock does not relish this soft, watery grain nearly so well, and for good reasons. An important part of the process of digestion is the mixing of saliva with the food during mastication. When grain is cooked to a soft, pulpy mass, it becomes so saturated with water that it is eaten too rapidly by the animal, the proper amount of saliva is not secreted and mixed with it, and thus one of the important aims of nature is defeated.

The practical feeder, with his trained eye, soon discovers the exact state to which the grain should be reduced to produce the best results. It is remarkable how nearly they all agree on this point. Their verdict is that only enough heat should be applied to swell and soften the particles sufficiently to make them easily masticated. They are all particular on this point. My own experience of many years leads me to believe that this is correct. Surely no one will claim that cooking food adds any nutriment to it. Surely no one will deny that any preparation that will enable the animal to get the maximum amount of nutriment out of it will be beneficial.

In my own community there have been two experiments made that seem to be entirely fair, where there was no sudden change just before the trial began and where only enough heat was applied to make mastication easy and thorough. One of these was made by myself. In each case there was a gain of between two and three pounds live pork per bushel in favor of the boiled corn.

This is no great showing in favor of cooking food for stock; nothing like the claims of those who are enthusiasts on the subject; nothing like the claims of those who are interested in the sale of steamers and food boilers, but it is far above the showing of the experiment stations. It seems to me that the claims of those who contend that cooking food makes it worth two to three times as much as the raw article are not well founded; that the scientific gentlemen who would have us believe that cooking food under all circumstances injures it for feeding purposes, should revise their opinions.

I have always regarded the profit of cooking ground food of any kind as doubtful, though it is contrary to the opinion of the best feeders who have ever lived. We have never been able to get results from thoroughly cooking ground feed to justify the extra labor involved. In summer we prefer to simply wet the food with cold water or slops of any kind and feed sweet. In winter we scald it and feed warm. Even the directions sent out by the makers of food boilers do not recommend much cooking, but advise merely bringing the water to the boiling point, stirring in the feed, raking out the fire and letting it simmer and cool. In this they are surely about right.

When dry hard corn must be fed whole, it will pay to cook enough to soften it. Mr. F. D. Coburn in his excellent book, "Swine Husbandry," says: "There can scarcely be a doubt that cooking dry, hard corn renders it more easy of digestion, enabling the animal to extract the maximum of nutritive material it contains, and that ordinarily fed in this form and of the proper consistency, it affords a larger percentage of flesh and fat than if fed in the raw state."

Every farmer knows what a gratifying gain hogs make when first put on new corn in the fall. Now, the object of cooking grain is, or should be, to make it like new corn. Where grain can not well be ground, thus softening dry corn will pay if followed persistently and intelligently. The trouble comes from boiling an occasional batch to a sloppy mass, which should never be done.

In closing let me say, do not be persuaded that if you have some cooking apparatus, you can grow hogs on so nearly no feed at all that a fortune is inevitable. On the other hand, if scalding or moderately cooking the feed be followed persistently and intelligently, under favorable conditions, you may be sure of moderately good returns for the expense and labor it involves.

THE FARM AS AN INVESTMENT.

By Hon. S. E. Kemp, Dayton, O.

[Read at the Independent Farmers' Institute held at Brookville, Montgomery County, March 18, 1899.]

The importance of the subject we have under consideration is manifest from the *a priori* consideration that food and raiment, two of the chief material necessities of man, are almost wholly derived from the farm. When it is further considered that the appropriation and use of these materials, results in their consumption and destruction, thus necessitating a constant replenishment of the supply, it will be admitted by common consent that the production of material for food and clothing transcends in importance any and all other industries required by the material needs of man.

Not alone by reason of the absolute necessity for its products, is the subject of the Farm and all pertaining to it, of interest; but if we consult statistics, they will show us that there are here employed more men, and that there is here invested greater capital, than in any other single industry; and indeed, exclusive of a very few of the other important callings, Agriculture is greater in Men and Money than all other remaining vocations combined!

In no branch of inquiry can there be either satisfactory progress or accurate results without the mental process of comparison. Without the exercise of this faculty we would fail to grasp even the most simple and elementary forms of knowledge; without it, we could comprehend neither distance, height, length, breadth, volume, strength, utility, beauty, virtue, nor any other attribute of mind or matter.

Before proceeding, therefore, with our principal inquiry, it will be well for us to ascertain and bear in mind, the results obtained in some other lines of activity and the rate of increment realized through other forms of investment, to the end that we may have some established standards with which to compare our own results.

Were the materials at hand or obtainable, it would be interesting indeed, for the purpose indicated, to marshall the results obtained in other leading industries, such as Manufacturing, Merchandizing, Insurance, Transportation and Mining. We, however, pass them by, not only by reason of a lack of data as to their net profits, but also, for the reason that in considering the value of an investment the security offered is fully as important an element as the rate of income earned.

In all these industries, money has been rapidly made and as rapidly lost. The entire assets of more than fifty insurance companies have been consumed in a single fire. It is said, that but few of those who have subscribed to the original stock of railroads, for the purpose of building the same, have ever realized a dollar from their investments.

In mining for the precious metals, experts have estimated that there is no average net profit whatever: but, if to the actual cost of working paying mines, there be added money spent in prospecting and in the development of those that prove worthless, that there is more than a dollar spent for every dollar of gold and silver actually mined. But the public eye is held in enchantment by the Bonanzas, the Comstocks and the Isabellas, rivalling in fabulous wealth the revelation of Aladdin's lamp. So he held, it fails to perceive the countless thousands whose dreams are never realized, and who are doomed to go down in failure to helpless, hopeless poverty!

In selecting our subject for comparison, if not an equality, there at least must not be a great disparity in the character of the security offered.

The state of Jalisco, United States of Mexico, for the purpose of building sewers, water-works, two school houses, and a market house in one of its principal cities, is now endeavoring to negotiate a loan in this country, amounting to one million five hundred thousand dollars. Notwithstanding that the state has no other debt, that the bonds are payable, principal and interest, in gold and that the property pledged is one hundred times greater than the loans, six per cent. interest, payable semi-annually, is the rate offered; and even at this, the bonds do not command a premium more than sufficient to cover commission, exchange and other expenses, incurred in floating the loan. If a similar loan were asked for to-day by the state of Ohio, United States of America, it would be snapped up at a premium, although the rate of interest should be fixed at three per cent.—just one-half the rate our brethren across the Rio Grande propose to pay! The difference in rate represents the difference in the estimated security of the one investment over that offered by the other; and in making this estimate of security, not alone is material wealth considered, because in both cases this is regarded as ample; but the inquiry goes deeper and involves a comparison of the character of the people of these states, and of the stability of their respective governments.

By common consent, the best intangible investment offered in this country, is the United States Government Bond. The entire wealth of the Nation is pledged for its redemption. It is subject to neither National, State, County nor Municipal taxation. It has a special value to banks as a basis for their circulating medium, and is particularly favored by financial institutions and large estates where security of investment and facility of management in large blocks are preferred, rather than a large rate of interest.

The bonds issued in 1898 to provide funds for prosecuting the Spanish-American war, bear three per cent. interest, payable quarterly. These bonds are now quoted at seven per cent. premium: so that any one investing in them to-day would receive two and eighty-five hundredths per cent. interest on the money actually paid for them. In point of security, the Government Bond has no advantage over Farm property with buildings properly protected by Fire and Tornado Insurance. In fact, in this regard the advantage is with the Farm; and this for the reason that with civilized peoples, while the Government may go down in conquest or revolution, the tenure to private property is always held inviolate by the succeeding Sovereignty. Thus it is, that while the hopes of Spanish-Cuban bond-holders went down with Cervera's fleet before Santiago Harbor, yet Spanish subjects in the Island of Cuba are to-day protected in all their proprietary rights in land. We are, of course, too patriotic to lay very much stress upon this idea; and yet it does in a degree tend to offset the advantage in favor of government bonds, arising by reason of the ease with which they may be handled in very large amounts.

The next class of securities in the order of favor, are National Bank Stocks, Street Railroad Stocks and Bonds, Steam Railroad Stocks and Bonds, County Bonds and the Bonds of Municipal Corporations. To discuss the value of each of these, would extend this portion of our inquiry beyond its proper limits. Suffice it to say, in regard to any of these securities, where there is no cloud upon their validity, that if they are earning and give promise of earning, four per cent. interest on par value, exclusive of taxes, then they are worth in the market to-day, one hundred cents on the dollar. Here, again, in point of security, the advantage is decidedly in favor of the farm.

The only other form of investment to which I will call your attention, as a standard for comparison, is that of the ordinary Real Estate Mortgage Loan. On this security, money is readily obtainable to-day at six per cent. interest. These securities under our laws are taxed at their full value. Assuming the average rate of taxation in cities to be two and one-half per cent. and in townships to be one and one-half per cent., there is left to the city investor a net income of three and one-half per cent., and to the resident of the country a net income of four and one-half per cent. Here, again, the advantage of security of investment is easily on the side of farm ownership.

In offering these standards, I have endeavored to be entirely faithful to facts and am quite certain that I am within safe limits in approximating the average rate of net increment for all these forms of investment, at less than four per cent. annual interest.

Passing now to our more direct inquiry, we learn from the last census report, that the total value of all tangible property of every kind in the United States amounts to the enormous sum of sixty-five billion dollars; or, in more comprehensive form, to sixty-five thousand million dollars; that of this sum, both on and off the farm and including Railroads and Mines, twenty-five billion dollars consists of personal property; that the total value of real estate is in round numbers, forty billion dollars, of which, thirteen billion or thirteen thousand million is made up of farm lands and permanent improvements thereon. In other words, farms comprise about one-fifth of the actual tangible wealth of the Nation and about one-third of its real estate values.

The whole number of families living in the United States, June 1, 1890, was twelve million six hundred and ninety thousand one hundred and fifty-two. The whole number of families occupying farms, was four million seven hundred and sixty-seven thousand one hundred and seventy-nine; of which, three million one hundred and forty-two thousand seven hundred and forty-six or sixty-six per cent. owned their farms, and one million six hundred and twenty-four thousand four hundred and thirty-three or thirty-four per cent. rented them. .

The value of the farm products in 1890, brought into being through the combined agency of these millions of people and these billions of money, was two billion four hundred and sixty million one hundred and seven thousand seven hundred and fifty-four dollars. Dividing this sum by thirteen billion, representing the total value of farms, and we have the surprising revelation that the average annual gross income from farms, amounts to nineteen per cent. of their total value. Surprising and even erroneous as this result may at first blush appear, I have no doubt but that it very nearly conforms to the facts. This, however, by no manner of means must be understood to indicate that the average rate of interest obtained from money invested in farms, approaches any such optimistic figures. For if such were the case, it would soon follow, by the operation of natural laws, that there would be such a marked increase in farm values, as to bring the ratio of income to value to a par with other investments of equal security. Those of you who have followed my line of thought have, no doubt, anticipated me when I say, that these two billion four hundred and sixty million one hundred and seven thousand seven hundred and fifty-four dollars represent gross income; and that if we are to have a proper basis from which to compute the rate of interest on rental obtained from lands with their permanent improvements, we must subtract from the value of this annual output the very important items of labor, seed, fertilizers, wear and tear on machinery and stock, and interest on money invested in same.

Just here we encounter a difficulty: for while the total value of live stock is accurately given at about two billion dollars, and that of implements at five hundred million, and the expenditure for fertilizers at thirty-eight million, yet, when we come to the larger and more important element of labor, the statistics give us no more definite information than is furnished by a statement of the total number of people engaged in agricultural labor; and do not, as they do in the case of manufacturing, give us the total amount paid or earned.

I presume by reason of the fact that so large a proportion of labor on the Farm is performed by the owner and his family; and this with so much intermission from actual employment, and by reason of a general lack of book-keeping in cases where help *is* hired, that the inherent difficulties standing in the way of obtaining accurate information, deterred the census authorities from undertaking the task. However, notwithstanding this acknowledged hiatus in our data, I think we may, by a process to which I invite your attention, arrive at an approximately correct conclusion as to what proportion of this two billion four hundred and sixty million one hundred and seven thousand seven hundred and fifty-four dollars annual income should be credited to the land and its permanent improvements.

In this country I believe it to be a pretty general rule, when land is rented for grain or crop rent, that the landlord shall furnish lands and buildings and keep same in repair; that he shall furnish one-half of seed and fertilizer and receive for his share, one-half the crop without participation in the profits resulting from poultry and grazing; that the tenant shall furnish all animals necessary to a proper cultivation of the Farm, all implements and machinery required and one-half of all seed and fertilizer, and receive for his share, one-half of all crops, supplemented by all profits from poultry and grazing. I believe this to be the general rule with the exception of tobacco and a few other crops requiring much more than the ordinary amount of labor; and also, excepting some territory in the more recently settled portions of our country where land is cheaper and labor is dearer than they are here. If the general rule be as I state it, it has not grown into a rule by accident; it is not even conventional without a reason. But the rule exists because long experience demonstrates that this division of profits is just and equitable. Making a proper allowance then, for those crops and sections where the landlord receives less than one-half the crop, giving him no share in poultry or the products of pasturage, charging him with the cost of repairs to buildings and fences and with one-half the cost of seed and fertilizer, I ask you to join me in the well considered judgment that the owners of the one million six hundred and twenty-four thousand four hundred and thirty-three farms previously mentioned as occupied by tenants, received as net income one-third of the value of the entire product of these farms.

It is true that a small proportion of these lands are rented for money rent. But even in these cases, the rent charged would no doubt be based upon crops for previous years and would closely conform to results obtained from lands leased for crop rent. Assuming, then, the approximate correctness of our deduction as to the proportion of the total output of rented farms which goes to the landlord and placing it at one-third of the entire product, we pass to the consideration of that larger and more fortunate class representing the three million one hundred and forty-two thousand seven hundred and forty-six families who own and operate their own farms.

Here our task is easy; for while as a matter of fact, in this case, the owner and tenant are one and the same individual, yet this joining and blending of relations, while inevitably tending to increased results both to land and labor, does not in any appreciable degree change the proportion of the joint product which should, on the one hand be assigned to the land and its permanent improvements, and on the other to labor, stock and machinery.

If the rule complies with justice in the one case, it accords with reason in the other.

The conclusion, therefore, is that of two billion four hundred and sixty million one hundred and seven thousand four hundred and fifty-four dollars gross annual product of all the farms of the United States, *one-third*, or eight hundred and twenty million thirty-five thousand eight hundred and eighteen dollars should be set down as the net income for the thirteen billion two hundred and seventy-nine million two hundred and fifty-two thousand six hundred and forty-nine dollars invested in Farm Lands and their improvements. Making the calculation, we find the rate to be six and one-sixth per cent. From this rate there must be a proper deduction for taxes. I have heretofore assumed the average rate of taxation in country districts to be one and one-half per cent. But as this is applied to a valuation not greater than two-thirds of actual value, the real average rate on true value would be one and one-half times two-thirds, which would be one per cent. Deducting this from six and one-sixth per cent. leaves five and one-sixth per cent. as our nearest approximation of the average net income from all the farms of the United States.

If the statistics be correct and the rule of crediting one-third of the product to the land be just then there is no escape from the conclusion.

This rate being the average one for all the farms in the United States, I have no doubt but that many sections would show a much less rate than this, and many others a greater one; and that different farms in the same section would show a wide divergence in results.

If I have a hearer who calls in question the substantial correctness of this conclusion, and who thinks it too favorable to farm ownership, I desire to call his attention to what ten thousand dollars invested in a farm will do for a man who loves Nature and Nature's God sufficiently to live upon it. For this sum, he can have one hundred and sixty acres of good land in the Miami Valley provided with a good house, large barn and all other required buildings; also stock, vehicles, machinery and implements necessary to its proper cultivation. No man who possesses a mind finds his highest happiness in having it entirely unoccupied. But I do claim that, upon such a farm, an intelliget farmer who is "onto his job," without any manual labor on his part, and with only such cares of management as are a rest and a delight to the mind, can live in comfort without any other source of income. It is true he cannot live upon terrapin and give Bradley-Martin social functions, but he *can* here, free from the care, strife and fierce competition of most other callings, live in peace and plenty, with all the comforts and his full measure of the amenities and luxuries common to this life.

Now, let him conclude that his city brother has the best of it and that he can better his investment by selling out and moving to town. He does so: and realizes from the sale of his farm, stock and machinery, their full value—ten thousand dollars. The first thing he will need in the city, will be a home for himself and his family. To get as good an one as he has just left, all things considered—some things better and some not so good—he will have to invest three thousand dollars.

He will then have seven thousand dollars left. Now, let him invest it in such manner as that its income will enable him to live on the same plane as heretofore. It he does as well as the ordinary investor does, he will have as an income from this seven thousand dollars just two hundred and eighty dollars upon which to live and pay the taxes on his home. He cannot do it. He has made a mistake, and unfortunately the mistake is one which, in most cases, cannot be retrieved through any light employment which city life affords.

My earliest and most fragrant memories are those associated with life on the farm, and, although for many years I have been busily engaged in other fields of endeavor, it is my deliberate judgment that there is here offered not only the greatest security of investment, but also, in their purest form and most perfect combination, those elements of true happiness: something to do, something to love and something to hope for.

THE FARMER'S LIFE.

By Mrs. Mary E. Davy Anderson, Huron, O.

[Read at the Farmers' Institute held at Milan, Erie County, December 23 and 24, 1898.]

The situation of a farmer makes his life different from that of other men. He can stand in his own door and look over his broad acres circumscribed nowhere by the will of others. He is surrounded by his property visible to the passerby and it is associated with his personality. He is in a sense a great man. All he does is known.' He is represented by his *farm*. If the fences are well kept, the roadsides clean, the buildings in good repair, the machinery under shelter, the fields neatly tilled, the furrows straight and systematic, he is known as a man of neat habits, a thrifty husbandman, and a good business man; for these qualities go hand in hand and are seldom found alone. His neighbor sees his work and patterns after it. His methods are inquired into and practiced. He becomes respected and people follow his example. Is he an honest man; does he pay his debts? If not, he is misleading some one. Is he a kind husband and father and a good citizen? If not, his example is bad again. Does he take a social glass for friendship's sake? If so, he is dealing out death and destruction to some one who has a strong appetite and a weaker will.

Cain said, "Am I my brother's keeper?" In a large measure each one *is* his brother's keeper and has no right to set an example which may injure him. The more prominent the position, the greater the responsibility.

The life in town or city is very different from that in the country. So many people are grouped together that personality is to some extent lost in the mass. Each one is like one of the bright irregular pieces of glass in a kaleidoscope — insignificant in itself, yet forming a part of the whole.

Their environments rather weaken than strengthen their characters. There are so many influences and one is so closely surrounded he does not develop the vigorous character found in the country. That is the tendency in all life. The oak, growing on the hill top alone, subjected to all the winds that blow, strikes its roots deeper into the soil, taking on a stronger hold at each blast that blows. It bows its head to the fury of the storm only to raise it higher again in its might when the wind has passed by, while the tree grown in the valley, surrounded on all sides, when suddenly exposed, falls with the first wind that blows.

The farmer must necessarily develop character and must think for himself. His condition compels him to do so. Then, too, he owns property; a fact which must strengthen character. He should be interested in all his surroundings, especially the laws of his state and his community, by which he is governed.

The farmer should read and inform himself so as to be ready at a moment's notice to act or to assist others. Dr. Arnold says: "What a man is, and what a man does on the spur of the moment is the result of countless thought. Any man who would do anything well must come at it from a higher ground." A farmer and his family have a better opportunity for reading than people living in town. Their evenings are not interrupted by people running in or some attraction down street that is so often more of a detriment than a benefit. Then, too, though physically tired, the farmer's brain has not been so overtaxed by business that he cannot appreciate what he reads. It is a pastime and recreation for him. It is said that "next to the love of God implanted in the heart, there is no greater safeguard than the love of good reading." Interest your children in reading. See that they have enough and right books to read and an opportunity to read them. Have a dictionary and encourage them not to pass a word by until they understand its meaning. It is the best way to master words and make them our own. Do not think you can not afford to buy books. It will be a good investment.

Many of our prominent business positions are filled by the sons and daughters from the farm. It must be so, for they have within them the elements of success. All their training has been toward self-reliance, industry, patience, steadfastness and endurance. Educate your children on the line that nature intended them for. Keep them on the farm if you can, but do not compel them to follow a business, not even farming, that they dislike. They will not suceed. It is sometimes a good plan to let them try what they think they would like. They will find that hard work is the companion of every one who makes a success of anything.

A farmer spends more evenings and eats more meals with his family than the most of men can. No other man can work with his children as the farmer can, for there are no outside attractions for them. The mechanic or business man in town is up and off before the family is around, and if he goes home for his dinner he is so rushed with business he can not stop to visit with his family. I met a man a few days since from Florida who said that farmers did not know how to appreciate their blessings. He was raised on a farm but had gone into a city. He occupied an office where the clerical service consisted of twenty men and one and a half million dollars passed through his hands every year, but he was a slave. His business kept him at the office until nine or ten at night and he rarely ate with his family except on Sunday. He handled more money than the farmer, but he had less freedom. Why accumulate so much money? "Shrouds have no pockets."

Why is it that we do not enjoy our surroundings more? We have spread out before us a panorama of the most beautiful pictures which, if put on canvas with only one-half their perfection, we would think marvels of beauty. Artists go into the country for their models and choose those which are the nearest to nature. Why cannot we enjoy them? I wonder how many farmers ever stop in the morning to look at the sunrise, to hear the birds sing or to listen to the whispering of the leaves? How many greet the cows, horses or sheep with a cheery good-morning or give them an affectionate pat? Do you know that animals appreciate such things and you are made happier thereby? It is said that naturalists are people of great longevity. It is conducive to health and happiness to be closely associated with Mother Nature.

The farmer has an opportunity to teach his child about the birds, plants, sky and many other wonderful things. The studies begun with the father may be continued and help the child to choose his vocation.

We have a useful book for children called "Wonders and Beauties of Land and Sea." It treats of the Animal and Vegetable Kingdom and is illustrated. It is well to interest children in these things at an early age.

One of our writers has said: "The beauties of nature turn the mind away from irritating thoughts to something better — the Author and Giver of all these beauties."

If we would spend a year in the city in one of those flats where one never sets foot upon the ground, we would come to our farm homes with our eyes opened and feel that we were in Paradise. You remember that the garden of Eden was only a farm. Adam and Eve were not contented, which was the prime cause of their losing their farm.

Farmers should study the best method of growing crops and stock and their prices. Some farmers neglect the papers for the sake of economy, but it is expensive economy in many ways. I heard an old farmer, who has by close application and hard work gained a competency, tell his experience. He had laid the foundation of his fortune by buying stock. He said he went among the farmers that were the most ignorant and did not know the value of their stock and bought on large margins and made money. He said those days were past. Farmers have made rapid progress. The grange, farmers' clubs and institutes have improved their condition so much they are not easily deceived. He said they now had to go into the west in order to make any bargains at all.

Is not this good news, that a farmer knows the value of his stock and is in no danger of being deceived by the first confidence man that makes his appearance?

There is a weekly paper published in Chicago which is of use to farmers, The Live Stock Report, published by Clay, Robinson and Company. By it you can keep informed on all the prices and facts concerning live stock. The daily paper is a great advantage, but to people living at a distance from the office it is difficult to get. What an advantage it will be when we can have rural mail delivery. The grange has been working for years to get this for the farmer. Let us coöperate with it.

Each farmer should know something about the laws of the land and also the persons who are to make those laws. Very few of the office seekers are unselfish. Each is going to please the persons who are most influential in electing him to office. There are some wrongs which might be righted. The farmers constitute an overwhelming majority, if they would work together. Power wins every time, and combination is power. I believe if our farmers would unite they could break up some of the gambling shops and have a fair price for their wheat and other commodities. It is not right that so much should be made off the farmer.

Officials are not always satisfied with their salaries and seek for an increase, and that increases your taxes, for you know most of the farmer's property is visible, while in most kinds of business it may be concealed and all depends upon the honesty of the owner.

You farmers can change these things if you will. It will take time and hard work, but in reading the biographies of our successful men and women, I find that success has only been attained by patient effort. No one reaches the top at a single bound. George Stephenson, the great engineer, while delivering an address at Leeds, suddenly roared out in his North Country accent, "Yoong mon, *parsevere, parsevere.* It has been the makin' o' me." I say the same to you. We must all persevere. We learn this in the story of Samuel Smiles and his "Self Help." Although this book has been translated into seventeen different languages and a quarter of a million copies have been sold in England alone, yet it was contemptuously refused by the first publisher, and the author left it untouched in his desk for twelve years. After he had made a reputation by writing the life of George Stephenson, "Self Help" was published and its sales the first year exceeded twenty thousand copies; and no work has done more good, perhaps, or received greater welcome.

I believe it is a farmer's duty to visit the schools and see how they are conducted. It will encourage both teachers and pupils, and I am sure the teachers will be more particular about the work done if it becomes customary to have inspectors. You would not think of putting your stock in the care of some one and never going to see if it was well cared for; yet it is the exception, rather than the rule, for a parent to visit the schools. Great care should be taken in selecting the persons who have charge of your children. Select those that will get the best out of your children both mentally and morally, and not those who will teach for the smallest salary. All persons are not born teachers, and they can not be made any more than an artist or a poet can.

I believe it is every farmer's duty to see that the temperance laws are enforced. You would not think of allowing your children to go to a town where there was a scourge of smallpox or diphtheria; yet the scourge of intemperance is much more to be dreaded — and the open saloon throws out its allurements to draw in your boys every time they go to town. The first may destroy the body; the last will surely destroy both body and soul.

I believe it is a farmer's duty to endeavor to have his children learn to love the work on the farm. This is one of the great questions of the day. I heard one method a few days since from a farmer. His son, a boy of thirteen years, had picked berries last summer and earned some money. He wanted to buy a bicycle. His father told him if he would invest his money in sheep instead, that he would keep them until he was twenty-one and the boy might have all the increase. The boy accepted the offer and bought five young ewes. The father laughingly said he guessed he had got himself into trouble, for if they had good luck, the sheep would cover his farm before the boy was twenty-one. Wise father! The bicycle would have taken his boy away from home and there is no telling what bad habits he might have formed. The sheep will keep him at home, as the sheep will require care. He is a property owner and will want to add to his possessions. Ownership of property develops character. Our neighbor has two little boys, one eleven, the other eight years old. They have a row of berry bushes, the proceeds of which they use to buy clothes and they are allowed to make their own selections. At our county fair they had the finest basket of potatoes on exhibition, that they had grown themselves. The youngest boy is fond of growing corn and uses every spot he can find. Next summer his father is going to let him have a piece of land to work. Fathers, try this experiment. I believe it is the secret of keeping the boys on the farm.

We had a fine exhibit of baking, canned fruits, jellies, pickles, Indian relics, curios, flowers, plants, etc. by our children at the last fair. The judges said they beat the older ones. The exhibit attracted as much attention as anything we had at the fair.

I believe it is every farmer's duty to take an interest in the county fairs and make them a source of education and improvement to the farm home. They were the first means used to develop and improve the condition of the farmer and we have not outgrown them if they are properly managed. Get your children interested, and I will guarantee they will succeed. The state fairs are a success. If they are of use to the state, why are not county fairs of use to the county? They should be and can be.

Our agricultural colleges should receive some of our attention. They were intended to make farmers out of the boys. How many of our farmer boys graduate from them to go back on the farm? My experience tells me very few.

What is the reason? Farmers must elevate their calling by elevating themselves. Matthews says, "If you are a bootblack, be a first-class bootblack." I say be a first-class farmer. Daniel Webster said, "There is plenty of room at the top."

Some think farmer's work is dirty work. Can you find any clean work? We admire a beautiful painting, yet there is no dirtier place than the work-room in an artist's studio, and the paints he uses are made from the same dirty soil that a farmer is despised for working in. Our careless personal appearance sometimes marks us. We think no one sees us and it does not pay to take pains with ourselves. Keep yourself up for your own sake. Respect yourself, if you wish to be respected. It is not expensive to keep a neat business suit, and it does not take long to change when one is going out. One's personal appearance is sometimes the key that opens the door to success. Of course you must dress according to your work, but no one thinks the less of you for that. It is getting old fashioned now to despise the farmer and only ignorant people do it. I am proud to say that I live on a farm.

There is no better educator than travel. It broadens the mind and elevates the taste. Instead of adding more to your broad acres or bank stock, take your families on a trip. They are not very expensive and it will be a source of perpetual pleasure. It is pleasant to read about the places you have seen, and to see the places you have read about. There are so many excursions now, that one can travel very cheaply if he chooses. Of course much depends upon the person. One can spend much or little.

I have written a long article and have not mentioned the prime factor in the farmer's home — the wife — not because there is nothing to say, but because there is so much to say it would require a paper in itself. But I must not close without mentioning some of the duties a farmer owes to his wife, the one he chooses for his companion through joy and sorrow, the one he promised to love, cherish and protect. Look into your hearts and see if you have fulfilled that promise. Look into her face and see if she looks as happy as before she came into your home. If not, why not? What has chiseled those deep lines on cheek and brow, and robbed the eye of its light? Have you given her all the love and sympathy that is her due? Sometimes the right of possession lessens our estimation of it. I wonder what your home would be without the wife. Cherish her while you may, for you know not when the death angel may enter the home and take away the loved one. Let us aim to make our homes bright and happy, so that each may bask in the sunshine of love.

FACTS FOR THE FARM DAIRY.

By W. C. Whitehead, Pataskala, O.

[Read at the Farmers' Institute held at Jersey, Licking County, February 10 and 11, 1899.]

The proper handling of the head of the dairy herd is sometimes a matter of life and death to his keeper. The Jersey bull is considered a dangerous animal. Any method of training that has been successful in keeping him tame and docile is of enough importance to engage our attention for a few moments.

When he is a little fellow, as soon as his horns are long enough, tie around them one end of a small rope fifteen to twenty feet long and tether him in a cool, shady pasture. When he is thirsty drive him before you to water and teach him the meaning of "go on," "gee," "haw" and "whoa," using the rope to control him the same as you would a single line to guide a horse. It is surprising how soon he will learn to obey the word. He will soon go where desired without having to wait until he is thirsty.

When large enough to need a ring, run through the ring a short chain with a swivel link in the middle and a ring on each end. Pass a stout rope through the upper ring, long enough to go around the horns and tie securely with three or four flat knots. Tie a long rope in the other ring and he is ready to go before you and do your bidding like an ox. By always using the same word and the same motion for each particular act you wish him to do, he will soon take delight in obeying. By going ahead he feels that he is leading the man and showing he understands what is said. He has more freedom and less cause for becoming irritable and angry than if every move were checked without a word of warning. When held at bay like a wild beast with a heavy staff and ring in his nose the bull becomes excited, and, like a human being, resists force with force until he becomes dangerous and for not being more amiable than his master he is led away to the slaughter. If every animal in the dairy were controlled more by the human voice and less by brute force its docility would be increased and also the income of its owner.

The feeding of the dairy cow in such a way as to keep her up to the limit of production and not waste any feed has much to do with successful dairying. The margin between cost and price is so narrow that if she is not kept to her highest limit by feeding only what will tend towards increased production at the least expense the profit of the business, on invoicing, may be found wanting.

Until recently but little attention has been paid to scientific feeding of stock in this country. Our grandfathers knew that old Brindle would respond more liberally when treated every morning to a warm mess of bran; they knew that the colt fed a liberal measure of oats would make a tougher horse than the one raised on corn and hay alone; they had discovered that young pigs would thrive better on bran slop and corn than on a plain diet of corn. These facts were well understood long before the balanced ration was thought of.

A complete food for man or beast must contain four different constituents. These are, first, certain mineral substances found in the ash of plants; second, certain compounds containing nitrogen, and which are called protein or albumenoid substances; third, starch, sugar and similar carbonaceous compounds, and fourth, fat.

The mineral and protein compounds are absolutely essential to growth and the play of the vital functions. If either be wholly withdrawn from the food death will follow, no matter how abundant the supply of starches and fats. Mineral substances are generally so abundant in our feeding stuffs that there is no necessity of taking any account of them in our feeding problem. Muscular tissue is largely protein, and hence feeds containing this substance are indispensable to growth and to the production of lean meat, while the same class of substances compose about one-third the dry matter of milk.

Carbohydrates include the fiber of feeds, the sugar, starch and gums, and furnish heat, energy and fat to the body. The fats in the foods produce the same effect as carbohydrates; and they can take each other's places, one pound of fat being worth two and two-tenths pounds carbohydrates for the production of animal heat. By digestion the carbohydrates become the source of heat and energy, and whatever surplus remains above immediate wants is stored up in the animal carcass as fat.

Protein is used during growth in the production of new tissues and in the repair of wornout ones; its nitrogen enters into the fibrin of blood, the albumen of muscle, the gelatin of bone and tendon, the casein of milk, and to a certain extent into the surplus fat. None of the animal albumen can be formed unless there is digestible protein in the food. To produce flesh and blood or any albuminous compounds within the animal body a ration containing protein must be fed.

Protein, carbohydrates and fat are called nutrients. A table giving the pounds of digestible protein carbohydrates and fat contained in one hundred pounds of the several substances used for food is called a table of nutrients. This table is made from the average results of several chemical analyses of the foods given. The pounds of nutrients of any feeding stuff are called the nutritive coefficients of that food. In different ways the exact proportion in which the different nutrients must be used to produce the greatest gain at the least cost has been determined. A milch cow of one thousand pounds requires twenty-four pounds of dry, organic matter per day, of which about sixteen pounds must be digestible. The ratio between the digestible portion and the carbohydrates increased by two and two-tenths times the fat is known as the nutritive ratio. Where the percentage of digestible protein is large in comparison with that of the other digestible constituents, it is spoken of as a narrow ration, while a wide ration is one in which the percentage of digestible protein is small compared with that of the whole. The ration is balanced if all the essential food elements are present in the right proportion.

The nutritive ratio of wheat bran is one to four. In other words bran contains one pound of protein to four pounds of carbohydrates or their equivalent. The ratio of good clover hay is one to four or one to five, oats one to seven, corn one to ten, cornfodder one to fifteen, wheat and oat straw one to thirty-two to one to thirty-five.

Young animals, under one year, need about one part of the flesh and blood forming matter to four or five parts of fat and force forming matter, that is they require a nutritive ratio of one to four or one to five; fattening animals and cows giving milk require a ratio of one to five or one to six; stock animals at rest in winter require a ratio of about one to twelve.

The feeding standards for milch cows is a ration for one day containing two to two and two-fifths pounds protein, twelve to fifteen pounds carbohydrates, five-tenths to eight-tenths pound fat. Making a balanced ration is combining feeds deficient in protein with those having an excess of that substance to make a ration which will contain the right proportion for the animal fed.

To formulate a balanced ration, take from the table of nutrients the nutritive coefficients of each substance you intend to feed, multiply the nutritive coefficients of each substance by the number of pounds you intend using of that food, divide each product by one hundred, or remove the decimal point two places to the left, add the several quotients together and the result will be the pounds of protein, carbohydrates and fat in the amount of feeds selected. If these sums correspond to the standard ration the work is done. If there is too much of any one of the nutrients, try again, taking less of the feeds which have a large percentage of that nutrient or more of the substances containing a small percentage of it. If one of the nutrients is below the standard it can be brought up by doing the opposite of what is required to reduce the amount. It may take several trials before the result will be a standard balanced ration, but the good results of feeding such a ration will pay well for all the trouble. By feeding what experience has taught will produce the best results at the least cost we are practicing true economy. Here is a balanced ration composed of feeds in general use: Twelve pounds cornfodder, ten pounds clover hay, six pounds corn and cob meal, four pounds bran and one pound oil meal. This contains twenty-three and eighty-four-hundredths pounds of organic matter of which two and six-hundredths pounds are protein, thirteen and four-hundredths pounds carbohydrates and fifty-nine-hundredths pound fat. With the price of clover hay at five dollars per ton, corn and cob meal twelve dollars, bran fourteen dollars and oil meal twenty-four dollars per ton, this ration would cost ten and one-tenth cents per day, or a trifle over five cents per feed.

This is only a trial ration. The individuality of the cows should be studied and each one fed what she will profitably eat. Our trial ration contains twice as many pounds of cornfodder and clover as of corn and cob meal, bran and oil meal. Twice as much roughness as grain is the right proportion. Make no sudden changes in feeding in either variety or quantity of food; gradually increase the ration until the cow reaches her limit of production; what would be a proper ration at one period of lactation would be entirely too much at another. Close observation and good judgment are of the greatest importance in feeding. Without them all the learning of the scientist is of but little avail.

When every requirement of nature is supplied with a sufficient amount of the right kind of nourishment, there is little danger of an animal's overeating.

A one-sided ration generally contains an excess of heat-producing substances. In the attempt to get enough flesh and nerve forming food to sustain life an animal will eat too much heating food, derange the digestion and do itself permanent injury. Suppose a milch cow, which requires one pound of flesh and blood formers to six pounds of heat and force producers, should be wintered entirely on cornfodder, which has a ratio of one to fifteen. To get her two and one-fourth pounds of protein she would be compelled to eat nearly thirty-five pounds of fodder daily. If she were fed straw she would have to eat more than twice as much. To eat so much would be an impossibility, and what she could eat would give no return.

The cow is a factory. Carbohydrates generate the steam to run the machinery while protein is the raw material to be manufactured into nerves and blood, bone and tendons, flesh and milk. It would be nearly as reasonable to expect flour from a mill supplied with fuel alone as to hope for milk from a cow fed heat producing food only.

Pasture is a balanced feed and when it is abundant the cow needs no other food to bring her up to her best. In recent years drouths have been so frequent that abundant pasture has been of short duration, something must be fed to supplement the short grass. Two or three pounds each of corn and cob meal and bran daily will do much towards keeping up the flow of milk.

As protein is the most necessary constituent in animal foods it is also the most expensive. The dairyman who is compelled to buy bran, oil meal and gluten feed enough to balance a large corn crop must have a bank account of some proportions. Good clover hay is nearly as rich in protein as wheat bran. It can be raised on the farm as cheaply as other hay. It draws from the atmosphere nitrogen with which it manufactures the most expensive and necessary food for the dairy. The roots and stubble left on the ground furnish humus to the soil and the manure from one ton of it, fed, is estimated to be worth ten dollars at the rate commercial fertilizers are sold to the farmer. A dairyman should endeavor to raise clover on one-third of the land he cultivates.. A three years' rotation of corn one year, oats and wheat the next and clover the last will supply his cows with a great part of the feed required.

I have had no experience with the silo, but am satisfied by the testimony of others that it is the cheapest and most pleasant method of harvesting corn. The fact that the food is prepared and of a uniform quality will lessen the care of feeding and insure a more regular supply of food and consequently a more constant flow of milk.

The cow is a good time-keeper. Any neglect to feed, water or milk her at the usual time will be resented by a falling off in milk.

You will observe that I have omitted all anecdotes and fun from this paper Facts were so plenty they left no room for fancy.

SELECTING AND TESTING THE DAIRY COW.

By Clare T. Goodwin, Copopa, O.

[Read at the Copopa, Lorain County, Farmers' Institute held February 6 and 7, 1899.]

When we look about us and consider the dairying business in all its different phases we are compelled to say there is room for a good deal of improvement in the way the average farmer manages his dairy.

Statistics show us that less than one-half of the cows in the United States pay for the feed they consume. To show the difference in profit and loss in a good dairy cow and even an average one, we will use a few figures, and figures, politicians tell us, cannot lie. We will say that it takes two hundred pounds of butter every year to pay for the feed and care each cow receives in each year. Then what butter she produces in a year over two hundred pounds is gain. We will say that A has a cow that produces two hundred and twenty-five pounds of butter in a year and his neighbor has one that produces two hundred and fifty pounds in the same time. You see that the cow producing two hundred and fifty pounds is worth twice as much to the dairyman as the one producing two hundred and twenty-five, and a cow that will produce three hundred pounds is worth twice as much as the one producing two hundred and fifty and four times as much as the one producing only two hundred and twenty-five pounds.

What business man other than a farmer would think of keeping anything that did not give good returns for what it cost him? But a great many farmers, following the slipshod methods of their forefathers, persist in keeping cows in their herds that do not begin to pay for the feed they consume and cancel what little profits the rest of the herd may be making.

I believe that the general purpose fake is responsible for a great many failures, and partial successes, of the dairy farmer. A great many dairymen cling to the idea that a general purpose cow, one that, although she does not make quite as much butter as the strictly dairy cow, yet, when she is old and worn out, will bring five dollars or ten dollars more at the butcher's block is more profitable than the cow with only one purpose, and that of making milk and butter.

I met a man the other day, a regular, lazy, good-for-nothing tramp. His battered hat was pulled low down over his downcast eyes, his shoes were worn out with tramping over many a weary mile and the tails of his shabby coat showed the toothmarks of many an angry watchdog. During a conversation with this man I asked him what his vocation was in life.

He said he had worked on the farm, had been a section hand on the railroad, he had sailed on the lakes two years, had worked in a coal mine several years, and he thought in the summer he would try sailing again.

He said, "I have been a kind of a Jack at all trades, and master of none," and as he shouldered his old bundle, he remarked, with a melancholy smile, "I suppose I am what might be called a general purpose man." And so it is with the general purpose cow. She is not very profitable for beef, and certainly is not profitable in the dairy.

I believe that the cost is enough less to raise and keep a strictly dairy cow, from the time she is born on up to the time when she becomes a cow, and during the eight or ten years of her usefulness, to more than make up for what little more the larger general purpose cow will bring for tough beef. We know that of the feed we give a cow she first takes out enough to support her own body, and then what is left goes into milk, and it follows from this that the larger the cow, the more feed it takes to support her body. I do not favor any particular breed, but I believe the best dairy cows are at least grades, if not fullbloods, of one of the dairy breeds, and that the best dairy cows must and will have the dairy form and temperament. The dairy cow is not, of necessity, a picture of beauty.

From the purpose for which she is kept, she cannot have the smooth and rounded form of the beef animal. Indeed, some of the best dairy cows would be passed by unnoticed by the careless observer because of the roughness of their forms. Not rough because they are poor in flesh, but from the nature of their conformation. In selecting a dairy cow we must not be misled by the superiority of the minor points, as the color of the skin, form of the limbs, etc., for, although it is well to have these as nearly perfect as possible, yet they are of little importance, compared with the three essentials, namely: A large chest capacity, a large stomach capacity and a large udder development; for it is impossible for a good dairy cow to be lacking in any of these three points. This is made apparent when we consider that, in order to produce a large flow of rich milk, a great amount of food has to be digested daily, and it takes a large stomach capacity to accommodate it. Then the great quantity of blood necessary to carry the nutriment to the glands to be secreted into milk, has to be constantly purified, and this takes a large chest capacity, and that a cow needs a large udder goes without saying. A dairy cow should have a large mouth and strong, muscular jaws, indicating a good digestion. She should have a full, prominent eye, with an expression of power to do. We know that a man's character, to a certain extent, can be read in the expression of his eyes, and this is true of the dairy cow; we can tell a great deal about her, not only of her temperament, but of her power to stand heavy feeding and produce a large amount of milk and butter.

Her head should be long, lean and tapering, with a pronounced dish between the eyes. The neck should be thin, rather long and set low on the shoulders. The withers, or top of the shoulders, should be thin and prominent; the forelegs set well apart, giving room for a wide chest. The back is not necessarily straight, and, running the hand along the backbone, we should be able to feel each vertebra plainly. The ribs should be wide apart, and the rib arches should gradually increase toward the loin, giving ample room in the abdominal cavity. The distance between the last rib and the point of the hip should be great, showing an openness of form without any tendency to lay on flesh. The hind legs should be thin and wide apart, cat-hammed, the butcher would say, giving room for a large udder. The tail should be slim and tapering, reaching to the hock joint.

The udder should be large and well developed, not fleshy, but when milked should hang in flabby folds. It should extend well up behind and well forward onto the abdomen. When full of milk the lower line of the udder should be as nearly on the arc of a circle as possible. The udder should be wide and the teats set well apart and of good size. The so-called milk veins should extend well forward, and the openings where they enter the abdominal wall should be large. The milk veins should be large, very crooked, and should feel elastic to the touch. The milk mirror should extend high, be wide and run well over the thighs. The general form of the cow should present the typical dairy wedge. That is, when viewed from the side the line of the back and the line drawn from the lower part of the udder along the abdomen and brisket should, if continued, form a wedge. Then when viewed from the front, two straight lines drawn from the outside of the thighs along the sides to the back of the head should form a wedge. And when viewed from above the lower part of the abdomen will form the base, the ribs the sides and the backbone the point of an imperfect wedge. This form will give the greatest development of udder, stomach and chest with the least possible amount of beef to support.

The hair should be fine and oily. The skin should have a somewhat yellowish tinge, indicating a good quality of milk. The secretions in the ear should be yellow and abundant, also indicating a good quality of milk.

But, unhappily, we cannot always tell by a cow's appearance just what she will do at the milk pail and the only way we can tell is by weighing and testing the milk. The time was when a cow's milk was valued only on the amount, no attention being paid to the quality. But since the advent of the Babcock tester we figure the value of milk, not only on the quantity, but on the quality also. No person owning a dairy can afford to be without a Babcock tester.

At our place each milking of every cow is weighed and recorded and each cow's milk is tested at least once a month and we think we are well repaid for our trouble. We have set our standard at three hundred pounds of butter per year and any cow we may have that does not come up to this mark we dispose of.

We have parted with several cows that we had supposed were good ones, but when their milk was weighed and tested for a year they did not come up to the standard. And we believe that if the dairymen would test their cows and weed out those that do not give a reasonable return for the feed and care they receive they would find dairying a much more profitable business.

WHAT IS THE MATTER WITH THE DAIRY COW?

By Wm. H. Sears, Barnesville, O.

[Read at the Farmers' Institute held at Barnesville, Belmont County, February 10 and 11, 1899.]

That there has been a little lull in the dairy industry of late is apparent, but the cow is not to blame for it.

We Americans are a peculiar people in some particulars; we go too much by "fits and starts," as it were, and we jump at conclusions, we are either all in or all out, we rely too much on what we imagine others are making money at and jump headlong without knowing where we will land, we do not exercise enough wisdom and forethought as to what the result of a business will be, before we undertake it. All these things will apply in the dairy as well as anywhere.

A few years ago when the bottom dropped out of the horse market, when wheat was worth only fifty cents per bushel, hogs three dollars per hundred pounds, and wool fifteen cents per pound, the farmers got the blues. They made radical and sweeping changes, and rushed pell-mell and unsystematically for the cow. Now this was a mistake; too many went at it without stopping to consider whether their location was adapted to it, without making the proper selection of cows, without proper equipments, without good markets, without knowing how to feed and care for their cows, without knowing how to handle the product, and most important of all, without stopping to consider whether they were adapted to the business. What has been the result of all this? Disappointment and dissatisfaction. Too much inferior milk, cream, butter and cheese have been thrown on the market, which caused prices to depreciate somewhat. But this is no fault of the dairy cow. She is willing and able to do her part if her owner will do his.

I am glad to say, however, that prices are improving and will still improve if we will all produce a quality of the product that will warrant better prices.

The cow is a delicate machine, and needs to be handled with care, skill and judgment.

Now, in the first place, we undertake too much; that is, we try to conduct too varied a business. The great majority of us have not the executive ability to conduct a farm in as diversified a way as we are doing at present in the most profitable manner. In my judgment it is far better to have some one branch a leader and let everything else be tributary to that. If you keep cows, make that a specialty. This idea of keeping three or four cows as a kind of necessary nuisance, that are in the way of everything else on the farm and a continual botheration and vexation, has to the average man but little profit and no charms.

The man who makes dairying a specialty can better afford to go to the necessary expense of purchasing the proper amount of equipments and machinery that will help to enable him to put upon the market a product of a better quality than he who has but two or three cows. The work and care of managing the herd is proportionately less; the expense of delivering the milk, cream or butter is also less. The feed can be procured cheaper on a large scale than on a smaller one; for instance, if feed has to be bought, it can be purchased on better terms by the ton than by the hundred.

The man who has several cows can well afford to build and fill a silo (a very necessary adjunct to a well-kept dairy), while he who has but two or three cows might not be justified in the expense.

Again, the man who turns his whole attention to the work will naturally take more interest in it. He will procure better cows; he will feed and care for them in a better way; he will keep the stables and surroundings in better condition; he will take more pains with the products and they will be of better quality; he will find a better market and thus be enabled to get better prices; in short, the man who makes dairying a specialty, if he properly manages, will make more money per cow than he who has but a few.

In speaking of the dairy cow, we mean *dairy* cow, that is, the cow that is *adapted* to the dairy. There should be great care and judgment exercised in the selection of cows. One great reason why so many people are complaining that there is no profit in keeping cows is because they have not the right kind of cows. One cow of a true dairy type, that is individually a good one, is worth a half-dozen common ones. The man who cannot afford to buy a good cow, and buys two or three common ones instead, is like the man that cannot afford to pay one dollar for a good dairy paper from which he may gain one hundred dollars worth of information.

Stubborn figures have demonstrated to me, in my own herd, that one cow has returned a net profit of more than five times that of another. Better pay liberal prices for good cows than keep poor ones as a gift.

One of the cheapest cows I ever bought I got four years ago and paid for her one hundred dollars cash. Last year she produced six thousand two hundred pounds of milk and four hundred and fifteen pounds of butter, while a daughter of hers, a two-year-old with her first calf, produced four thousand eight hundred and sixty pounds of milk and two hundred and ninety pounds of butter. Of her descendants I now have five good cows and one bull good enough to be at the head of any herd in the township. While I have bought others for a great deal less money, compared with the above they were not worth driving home.

So, great care must be taken in the selection of cows for the dairy, and then they should be tested frequently, in order to ascertain to a certainty whether or not they are meritorious, for the average man cannot always tell the real value of a cow by her appearance.

The scales and Babcock tester, if properly used, will frequently astonish you and show you where you have been mistaken. They will show you which cows to discard and which ones to keep. It is very important to keep accounts with our cows, not only of the milk and cream produced, but of the feed consumed as well. Here again is where we farmers do not put enough business into our work.

That there is money in dairying, even now, there is no doubt, if properly managed, but if you expect to make a success at it, you should study it well, then go at it for all there is in it. And if you will attend to all the necessary details in a business-like and systematic way, you will find the dairy cow "is all right."

THEORY AND PRACTICE IN THE FARM DAIRY.

By B. W. Havens, Africa, O.

[Read at the Farmers' Institute held at Delaware, Delaware County, December 12 and 13, 1898.]

With the people of America bread is the staff of life, and the most of us like to have our bread buttered; and when we remember that the butter we eat costs more than the bread on which it is spread, we can begin to understand the importance of the butter industry, to say nothing of other branches of dairying. While Ohio ranks third as a dairy state, were it not for the Western Reserve we would fall far below that. Delaware county has never been considered in the dairy section, but we are gaining in that respect and with all our natural resources I see no reason why our section may not become the peer of any part of the country.

Some one may say that he does not want to make ten cent butter. Neither do I, but while our grocers and hucksters are paying from ten to thirteen cents for butter, the wholesale price of the better grades, in the city markets, has been twenty-two and twenty-three cents. The grade known as country butter should be a thing of the past. The creameries have done much to raise the standard and those who are situated so they can will do well, I think, to patronize a good creamery; but those of us who cannot do this, can make just as good butter at home. Another may say, "The average yield per cow is about one hundred and twenty-five pounds of butter in a year and that is not very big pay even at the better prices." True, but we must rise above the average of the country in quantity as well as quality, or we will never attain success.

While I would not pose as a teacher on this subject, if, by giving the result of seven years' experience and study, I can help others to do as well in less time or with fewer mistakes, my efforts will not be in vain, and I would also learn from your experience, for what impresses me most about dairying is its magnitude and how little any of us know about it.

In order to be successful in it, and no one wishes to undertake that in which he will not be successful, the first requisite is the dairyman himself. He must have the force of character necessary for success in all vocations. He must have ability to grasp and solve problems more difficult than ever he encountered in algebra or geometry. He must have a natural love for cattle in general and for the cow in particular. He must attain a knowledge of the dairy cow and her requirements that will enable him to make the most of her. He should be able to see the qualifications of a good cow and be able to intensify them in the progeny.

The herd should be of cows of the dairy form and temperament, and these can be attained best, quickest, and cheapest by selecting from one of the approved dairy breeds, not necessarily thoroughbreds, but with enough pure blood to bestow its characteristics. Now I do not say this for the farmer who keeps two or three cows to supply his own table and raises cattle for the shambles, but for the one who wishes to make the dairy a source of profit. Each one of the cows, individually, should be capable of paying well for keeping and not have to board off her more worthy neighbor. She should at maturity produce at least three hundred pounds of butter per year. This can only be determined by the scales and milk tester, and then it will probably require a number of years to reach this point with all of them. My own cows last year, 1897, over one-fourth of them heifers, averaged two hundred and eighty-two pounds, and I hope soon to reach the three hundred pound mark for the entire herd, but I find it slow work, with many hindrances.

Dairy cows cannot stand exposure as well as the beef breeds and therefore must be well stabled. During the winter I would keep them in at least twenty-two hours each day, and if you can water them in the stable, perhaps all the time would be better. On some pleasant days they might be as well off in the yard, but the next day is liable to be stormy, and if kept in then they will be restless and uneasy, expecting to be turned out, so I prefer to keep them in all the time; and for this close confinement I would advise some other fastening than the rigid stanchion. I turn my cows out to water once a day while I clean the stable. I think water twice a day would be better, but when they are fed ensilage I have failed to get them to drink the second time, so have stopped trying.

They should have a generous ration, well balanced in the elements required to make milk and rich enough to furnish the proper nutrition. The best foundation for this I have found is, for a winter ration, all the corn ensilage that will be eaten, followed by clover hay to satisfaction, twice a day, which are the feeds most cheaply grown on our farms. Others may be substituted by changing the grain to suit. As most of the grains grown at home, and rough feed too, excepting clover and green grass, are carbonaceous, it is usually best to buy some of the by-products of grain, rich in the albumenoids, to balance the ration; the market price will determine which is the cheapest. I have been experimenting for the last fifteen years in trying to raise my own albumenoids on the farm in the shape of oats, peas, beans, etc., but have concluded that it costs too much and they can be obtained cheaper in some of the by-products to be found on the market. For the last few years I have depended largely on gluten meal or gluten feed to furnish the proteins and feed about as follows: Ensilage, corn fodder and clover hay, equal weight of gluten and bran, and, if the ensilage is not well eared, half as much corn and cob meal, and a little cotton-seed meal, about one pound per cow. I give of the mixture six to ten pounds per day according to the individual capacity to use it. I like to feed one or two pounds of oil meal, but it has been so high in price for a few years compared with other feed as to be "out of sight." Oats are good for part of the ration, but are usually too expensive to buy and I find them too expensive to raise. One thing that should be borne in mind is the effect the feed will have on the texture of the butter. Remember that green grass, gluten and oil meal will make the butter soft, but corn ensilage, cornmeal, and especially cotton-seed meal, will harden it; therefore we must mix the feeds so as to give it the right solidity as well as to balance the ration.

I would not turn the cows out to pasture in the spring till the grass is well started so they can get enough to satisfy them, but start in slowly, not more than an hour the first day. The grain can now be reduced. Cut off the gluten entirely, as it will make the butter soft, reduce the bran and increase the cornmeal a little, and keep on with the cotton-seed meal to keep the butter firm; keep the cows in the stable at night till the ground is thoroughly warm, which is usually about the first of June, or there is danger of garget. About July 4 the pastures usually begin to dry up and a small patch of peas and oats can be fed with relish and profit, followed by sweet corn in abundance as the drouth becomes more severe. Different plantings or different varieties will prolong the season till frost and then it can be shocked for fall and early winter feed. Next year I shall try a small patch of sorghum for summer and fall feeding in place of part of the sweet corn. I have had no experience with it, but one of my neighbors has tried it with good results. It stands drouth better than sweet corn. The best soiling crop is ensilage left over from spring feeding, but as I seldom have any left I have to depend on those mentioned above. The cornmeal can be dropped when the sweet corn comes and the bran increased a little. The worst drouth to tide over is the one that comes after frost has killed the corn and there is nothing green for the cows to eat. The only remedy I can see for it is to build another silo and begin feeding from it as soon as filled, but as I have not got to that yet I have to increase the grain, even if it is expensive.

When flies get very bad, through July and August, I find it pays well to keep the cows in the stable days and turn them out to pasture nights. Last summer I sprayed them every evening for a week with kerosene emulsion, which kept the horn flies pretty well in check, but did not entirely exempt them from the pest. About the first of October, when the nights get frosty, or it comes cold rainy weather, I would begin stabling them again, for it burns too much butter to keep them warm in the cold night air.

When it comes to stabling nine or ten months of the year, feeding forage about the same length of time and grain all the time, some may think that is too much pampering and coddling for the common farmer to give his cows, but it is attention to just such details that makes the profit of dairying. I learned these lessons first by reading and soon forgot them, but when experience taught me the same at fifty cents or more per day in loss of butter from neglect of them, I could then remember and put them in practice.

The milking should be done regularly, neatly, quickly and quietly. Let there be no loud talking about the stable at this time, no strangers about and no harsh words or blows if a cow should upset the milk pail or even the milker; be sure to hold your temper. Let each cow's milk be weighed and a record kept, and test the milk often enough to know just what each one is doing, even if it is some trouble.

As butter is usually made at the farm dairy, and that is the only branch of dairying that I am familiar with, we will now take the milk to the house or dairy room, where the cream must be taken from the milk, and as open pan setting is detrimental to quantity and quality, the most fashionable thing is to have a separator and *twist* it out. After repeated tests and studying the matter carefully, I have reached the following conclusion: With more than twelve cows probably the separator is best; with from ten to twelve cows the case is somewhat doubtful; and with less than ten cows I would say use a portable creamery; but of course different circumstances might warrant a different conclusion. Why this preference for the creamery? First, it saves half of the purchase money, and a bird in the hand is worth two in the bush, or fifty dollars saved to apply on the mortgage is better than one hundred dollars of uncertain prospect. Next, it saves work, for I can put in a cake of ice or change the water much easier and quicker than to grind the milk through, and five months of the year I do not have to do even that, and it is much easier to wash two cans that are all solid so they need no lifting than to wash the separator with from five to thirty-five parts and some of them quite heavy. With the creamery I can usually skim to one-tenth of one per cent, which is all the manufacturers claim for the separator, and I never tested it when it showed more than four-tenths per cent of butter fat; at most the loss is so slight as to take a long time to pay the extra cost of a separator. But do not think that I am opposed to the separator, for I am not, and I expect to get one myself some day, as I think I am outgrowing my creamery. I would only take exception to the popular view as to when the separator will pay.

But however the cream is separated it must next be ripened, which is the most particular part of butter making and the hardest to tell how it should be done. Our plan is to keep the cream at such a temperature, and stir frequently the day previous to churning, that it will show slight acidity by evening, then add the evening cream, and by keeping it at about sixty degrees it will be in good shape for churning in the morning, of a smooth, pasty consistency. Although it is not according to most teaching on the subject, we sometimes, especially in warm weather, add the morning cream, not to exceed one-fourth of the cream already ripened, and by keeping it three hours at the churning temperature or a little above, stirring it frequently, it is thoroughly ripened, ready to churn; but this last needs to be done cautiously and with knowledge that you are getting all the butter. By thus churning up close you do not have a quantity of old cream on hand to begin with and it is not necessary to churn so often to make the best butter, twice a week is often enough if your churn has capacity to handle so much, but it should not be over half full, and it should be of the end over end kind, the common barrel is as good as any. The churning temperature should be somewhere from fifty-six to seventy degrees, no one can tell you exactly what; you will have to find that out for yourself, so much depends on season, feed of the cows, manner of keeping cream, etc., but churn it as cold as you can and have the butter come in thirty to forty minutes. We make ours fifty-eight to sixty degrees in summer and sixty-three to sixty-five degrees in winter. Color the butter to suit the market, and put it in with a clear conscience, for there is no deception or fraud about it; it is simply making it more attractive to the eye. The Cleveland market demands a good June color all the year around, but it is best to shade off a little lighter in fall and winter for Columbus, but do not make it so light as to be noticeable.

Revolve the churn at the speed that will give the best concussion, this is usually sixty to seventy times per minute, and stop when the butter grains are the size of large fish eggs, or about when the glass is entirely clear. Draw off the buttermilk, if you can, but do not worry if it will not draw off, but strain in a bucket full of water of about fifty degrees in temperature in which was dissolved a good handful of common barrel salt, revolve the churn a few times when it will separate and buttermilk draw off all right (I am supposing a ten or fifteen gallon churning). Run it through a coarse strainer to catch the particles of butter that may wash out. Pour in another bucket of weak brine, turn and draw off as before, and repeat till the brine runs fairly clear, usually at about the third washing. In cold weather the last water may be warmed eight or ten degrees. Weigh out one and one-fourth ounces of the best dairy salt (I prefer the Worcester brand) to the estimated pound of butter, sift it slowly on this granular butter, stirring it in the while with a large wooden fork, and let it stand twenty to thirty minutes to dissolve and strike through.

Now while the butter is salting let us take a look at the butter worker. We find long ones and short ones, round ones and square ones, with levers and rollers, fluted and smooth, and the latest fad is a combined churn and butter worker; but whichever kind it is, the best place for it is out in the shade of the big apple tree just back of the corn crib, where by hitching on a few boxes and broken chairs the children can make a beautiful train of cars.

I have never seen the need of a butter worker in the dairy, but used to suppose it was a necessity in handling large quanties of butter. In the last few years I see the best creameries of New York have discarded the butter worker as worse than useless and manage their five hundred pounds of butter the same as I do my twenty-five pounds. But to return to the butter; turn the churn slowly, stopping occasionally to draw off the brine that accumulates, till the butter is in a roll or in large lumps, when it is ready for printing or packing, which will expel all the surplus brine left. This work should not all be left for the women, for butter making requires the strong arm of a man as well as the neatness and tact of a woman.

The most of our butter we print in brick-shape, pound blocks, wrap it in parchment butter paper and ship to a grocer in Columbus who gives us the wholesale price of the best creamery butter. Sometimes, when we have more than he can handle to good advantage, we pack some in tubs and ship it to a commission house in Cleveland, where no questions are asked as to who made it, or how it was made, or what kind of cows you keep, but it is sold for just what it is worth, and is a good place to test your butter and find out what the world thinks of it. If you are situated so you can, and have a knack for the retail business, it will pay best to deliver direct to the consumer and put the middle man's profit in your own pocket, but circumstances must decide that.

For the year 1897 our butter averaged eighteen and one-eighth cents per pound, the lowest price since I have been in the business, making fifty-one dollars and eleven cents per cow. The expense of baskets, paper, tubs, commission, express, salt, etc., amounted to about one cent per pound, which left clear forty-eight dollars and twenty-two cents. The value of the calf and skim milk I have estimated at ten dollars more, making fifty-eight dollars and twenty-two cents. It has cost me to keep the cows twelve dollars for grain and fifteen dollars for pasture and rough feed, twenty-seven dollars in all, leaving a little over thirty-one dollars for the work and the interest on the value of a cow.

This subject is altogether too large to admit of going into details, so I will submit the foregoing as an outline of our theory and practice in the farm dairy.

BUTTER MAKING.

By Roy D. Woodworth, Geneva, O.

[Read at the Geneva, Ashtabula County, Farmers' Institute held January 16 and 17, 1899.]

In discussing the making of butter, we ought, first, to consider the condition in which the butter fat is found in the milk. It is not in solution in the milk, but is in the form of small globules held in suspension in the milk serum. These globules are so minute in size, that a drop of average milk contains fully two hundred millions of them; and it must be remembered that only three and seven-tenths per cent. of this drop of milk is butter fat. These globules vary greatly in size in the milk from the different breeds, and the different individuals in the breed. It has been found that the different breeds of Channel Island cattle give milk containing the largest fat globules. The butter fat not having as great a specific gravity as the milk serum is forced to the surface by the force of gravity. The larger the fat globules, the greater will be the pressure forcing them to the surface.

This being true, then the larger the fat globules, the more complete will be the creaming of the milk. Butter fat is made up of several kinds of fat; some of them are liquid at an ordinary temperature, and some are solid. The solidity of the butter is influenced to a very great extent by the proportion of these different kinds of fat. The more of the soft fats in a given sample of butter fat, the softer it will be, and *vice versa* The experiment stations have found that the different breeds of Channel Island cattle also give milk whose butter fat contains the largest amount of these hard fats. Consequently, the butter made from their milk, other things being equal, is more firm and will stand up under a greater degree of heat than that of the other breeds of dairy cattle.

There are three different systems of creaming milk: the first and oldest, is the shallow-pan system; the next, which was a great improvement over that system, is the deep-setting system, and the latest, and by far the most economical and perfect, is the centrifugal system, or separator.

To get the best possible results from the shallow-pan system, the room or building in which the milk is kept should be as free from foreign odors as possible; for, if the milk is kept in the kitchen or living room it will absorb odors which are sure to be objectionable. This system will afford a more complete separation of the butter fat than the deep-setting system, but, on account of difficulty of removing the cream, there is a great loss of butter fat. This loss is occasioned by the currents that are caused by skimming, as they are sure to carry some of the fat globules to the bottom with them. In order to obviate, as far as possible, these currents in skimming, the milk should be allowed to become sour. Consequently the temperature of the creaming room should be kept from about sixty to seventy degrees, as the souring should take place in from thirty-six to forty-eight hours.

The air of the creaming room should be kept moist, to prevent the surface of the cream from drying, as clots of cream will form. These clots will not churn, but will remain in the butter forming those small white specks, which are so troublesome at certain seasons of the year. Care should also be taken not to have the air too moist, as it would then cause mould to form on the cream. If the milk is allowed to become coagulated, one is apt to get parts of the curd in the cream. These will, also, form clots or white specks, in the butter. This can be avoided by straining the cream through a hair-cloth strainer, which can be procured of any dairy supply house for the small sum of from twenty-five to fifty cents. Straining the cream will break up the clots of cream and remove the pieces of curd.

In the deep-setting system the milk is set in cans about twenty inches deep and from eight to ten inches in diameter. Immediate setting and a low temperature are the things most desired for the best results in this system. If the milk should become cold before setting it should be warmed up to about ninety degrees before it is placed in the tank. The temperature must be kept down below fifty degrees at all times to secure anything like satisfactory results. If the cans can be kept in running spring water, whose temperature is below fifty degrees, that will, perhaps, prove the most satisfactory way. If this temperature cannot be obtained ice must be used, and enough of it to still keep the temperature down below fifty degrees after the heat is all taken out of the milk. In skimming the cans should be arranged so that the milk can be drawn from beneath. It is not safe to skim nearer than within one inch of the cream lin.e If the milk is drawn out clear down to the cream line the loss of butter fat will be at least one-half per cent. on the whole amount of milk.

The centrifugal system of creaming, like the two gravity systems just mentioned, depends, for its efficiency, upon the difference in the specific gravity of the milk serum and the fat globules: but centrifugal force is substituted for the force of gravity. The tendency of separation is increased in all probability two thousand times over gravity; or, in other words, it will cream milk two thousand times faster than the gravity process. To secure the best results with this system the speed of the machine should be kept up to that recommended by the manufacturer, and the temperature of the milk should be at least ninety degrees. The best results are obtained, as a rule, in separating the milk as soon as it is milked, but good work may be done by warming the milk up to eighty or ninety degrees.

The separator should not be started until there is enough milk to keep it running till all is separated, because, if the milk should run out, the cream wall would harden and clog the machine. A good separator should reduce the fat in the skim milk down to one per cent., which, in itself, is no small item, as the best that can be done by the deep-setting system, on the average, is about seven per cent., or a saving of a little over nine and one-half ounces of butter fat in every one hundred pounds of milk. Another great advantage of the separator over the gravity system is that you can have the thickness of the cream just as you want it. It is a great help in churning, as the thicker the cream, the more thorough will be the churning.

Another advantage is the cleanliness of the cream, as it contains no dirt whatever. The dirt will either remain in the bowl or run out with the skim milk; but the larger part will remain in the bowl. If the milk should become tainted one can add enough hot water to the cream to bring the temperature up to one hundred and sixty degrees, and run it through the separator again. By so doing the taint will be nearly, if not quite all, removed, but the cream must be cooled down again afterward. Only that milk which is tainted should be so treated, as it will be likely to make the flavor of the butter flat unless mixed with cream that has not been so treated.

These statements being true in regard to the creaming of milk, the shallow-pan system ought never to be considered in the making of first-class butter on a paying basis, because of the very great loss of butter fat which cannot be avoided, and the sour condition of the cream when it is taken from the milk.

Where one has spring water with a temperature below fifty degrees during the summer season, or can supply enough ice to keep the temperature down, then the deep-setting system may be used with very good results, but when one has six or more cows the separator is to be recommended as the best and most economical because of its close skimming and its ability to remove all foreign substances and taints from the cream.

The only necessary preparation of cream for churning is the ripening. Butter can be made from sweet cream, but it lacks flavor. The cream should be cooled down first to a temperature below fifty degrees until enough has collected for a churning. The object of this is to solidify the butter fat, so that the butter will be hard and have grain, and to keep the cream from changing until enough is collected for churning, when it should all be ripened together.

To ripen cream its temperature should be raised gradually to sixty or seventy degrees and held there until it has a somewhat sour taste and a thick, glossy appearance. The best butter makers now use what is called a "starter." This "starter" is made by taking some fresh skim milk, free from taints, raising its temperature to ninety degrees, and setting it away in a warm place for twenty-four hours, when it will have a jelly-like consistency. It should be used at the rate of one part starter to fifty parts cream, straining it through the hair-cloth strainer and stirring it in well. This will hasten the process of ripening, and, as a rule, improve the flavor and aroma of the butter. The same starter should not be used more than twice, for standing, it is apt to gather some flavor which would be detrimental to the butter. Cream may be ripened in twenty-four hours by holding its temperature at sixty-five degrees and adding the starter. If it is desired to ripen it in a shorter time raise the temperature to seventy degrees. If a longer time is desired, lower it to sixty degrees.

Sweet and ripened cream should not be mixed together just before churning, as it is sure to result in a loss of butter fat. If sweet and ripened cream must be mixed, it should stand for several hours before churning.

Churning depends upon the adherence of the fat globules. If the churning temperature is too high the globules will be so soft that they will not adhere to one another, but, instead, will break up and become smaller. If too low, they will be so hard that they will not adhere to one another. No positive churning temperature can be given for the reason, as told you in the beginning of this paper, that the butter fat from different cows varies in the per cent. of the solid and liquid fats, but it should range somewhere from fifty to sixty degrees.

The churning should be done at as low a temperature as possible and have the butter come in from one-half hour to one hour, as this will insure close churning and firm butter. If the churning is done in less than one-half hour there is sure to be a large loss of butter fat.

The most successful churns are those which contain no internal fixtures. The dash churns, and those which have paddles arranged in them, do not churn as thoroughly, as they do not stir all the cream. The rectangular, barrel and swing churns are all good, but the barrel is the best, where not used every day, because it can be tightened up where it shrinks.

Whatever kind of churn you get, see that it has a good, large opening, so that it may be easily cleaned, and the butter readily removed; that the cover is securely fastened with a fastener that can be opened readily, and that it has no pockets where cream can collect, as it is sure to become sour and injure the flavor of the butter. If a good churn is used, one that is free from internal fixtures, the cream well and evenly ripened and the temperature kept down so that it will take at least one-half hour to churn, one should not leave over one per cent. of butter fat in the buttermilk.

If a little cold water, or better still, cold brine is added just as the butter breaks, it will make it separate better. The churn should stop when the particles of butter are about the size of a wheat kernel. The buttermilk should then be drawn off, using the hair-cloth strainer to catch any particles of butter that may chance to come away with the buttermilk. After allowing it to drain for a moment about three or four times as much cold water as there is butter should be added and the churn revolved a few times. The water should then be drawn off, using the strainer as before, and allowing the butter to drain quite thoroughly.

Unwashed butter has a better flavor, but will not keep as well; one can wash the flavor all out of butter so that, on the whole, once washing. and never over twice, is best. Butter may be worked in the churn with good results; and it is possible to work it in a bowl with a ladle, but extreme care has to be used not to spoil the grain. Never, under any circumstances, draw the ladle over the surface of the butter, as that is sure to spoil the grain. The most satisfactory way, however, to work butter is with a butter worker. One may be had for five or six dollars, and much better work will be done, as a rule, especially with beginners.

Butter should be salted to suit the taste of your market or customer. It is usually salted at the rate of one ounce to the pound. Never use more salt than will be dissolved in the water contained in the butter before working. Salt that will dissolve very readily in water is the only kind that should be used for salting butter.

The principal foreign substances that contaminate salt are lime and magnesia, and are not easily detected. To detect the impurities make a strong brine and add a little carbonate of soda, or washing soda. This will precipitate the lime and magnesia, and make a milky looking brine. Salt which attracts moisture in any quantity contains lime. Butter should be worked until all of the salt is dissolved and evenly distributed and the butter has become firm. If the salt is not evenly distributed the butter will have a mottled appearance. Those parts containing the most salt will have the most color.

If the temperature of the butter when working is too high it will be greasy:

if too cold the granules will not adhere to one another. A temperature somewhere between fity and sixty degrees will be about right. Butter should be well cooled before being put on the market. It is also best, on the whole, to dispose of butter while fresh. Try to get it to the consumer within two weeks from the time it is made.

Generally speaking, in farm dairying, one can look up customers, and, by putting the butter up in small, attractive packages, can depend upon an increase over the market price for Elgin butter of about twenty-five per cent. Perhaps the most acceptable way of packing is in prints. One-pound veneer packages can be bought at wholesale for one-half cent each or retail at three-fourths cent each. The print of butter is first wrapped in parchment paper and then placed in one of the packages.

In closing I would say: To make butter on the farm of good quality and in an economical manner it is necessary to have, first of all, cows of the distinctive dairy type, a Babcock milk tester, plenty of ice, a creamery, a good churn, dairy thermometer and a pair of scales. I feel sure that it would be better to replace the creamery with a separator where one has six or more cows.

I do not mean to say that it is impossible to make first-class butter with the dash churn and the shallow-pan system of creaming milk, but the impression I would like to leave is this: That if you want to make butter in the most economical manner they are things of the past, and should not be considered at the present time.

THE ART OF FEEDING AND CARING FOR BREEDING EWES.

By R. F. Reeves, Albany, O.

[Read at the Farmers' Institute held at Albany, Athens County, December 30 and 31, 1898.]

Looking back over the history of the sheep we shall find that feeding has always been the first part of the process of improvement. This is reasonable as well as indisputable, and we may take it as the first and important part of improvement, and the indispensable preliminary to better breeding. For if characteristics are inherited, as we must believe, then the habit of eating and digesting the largest quantity of the best food, and turning to growth of carcass or fleece, must be the first means of approach to an improved condition and standard. So that feeding must come first and this inheritable aptitude for the making of growth, or early maturity, be made the basis of the improvement desired. Although this view is stubbornly contested by some people, and breeding is placed first in the category of means of improving our domestic animals, it seems that such a view is wholly untenable, and quite opposed by the practice and results of breeding. It is unreasonable as well, for if the breeder's axiom — like produces like — is true and well founded, then we must first make the parent what we wish, as far as we can by stimulating the ability to turn good feed into growth, and then, by breeding from these improved feeders, get a progeny upon which we may be able to improve still further in this direction.

Were it otherwise, we should have no starting point to breed from for the improvement of the flocks. Feeding is the main business of the mutton producer. But as it has been shown that the wool is a mere outgrowth of the flesh and skin, partaking as closely as may be of the character and substance of the flesh, we cannot improve the flesh of a sheep without at the same time improving the fleece. These go together. Every expert knows, and every shepherd should know, that wool is seriously damaged by poor feeding. Every "set back" of the sheep is marked by a weak spot in the fleece and the wool is fit only for the cheapest kinds of products.

The growth is also arrested, and as an example of the need for good feeding for a good fleece, it may be shown that as soon as the sheep is shorn, and the new growth of the fleece calls for extra nutriment, the appetite of the sheep is notably increased, and if it not duly supplied with the quantity and kind of food needed the sheep becomes thin, or if the carcass grows the fleece does not.

It is a fact that in the nutrition of an animal, the elements of the food go first to sustain the vital functions, for an animal will live although it loses flesh and becomes thin and poor. Thus the needs for life will be supplied first, and then the secondary product — the flesh — is provided for, and last of all the fleece. Every well informed shepherd is fully cognizant of what the French have done in regard to their fine Merinos, whatever sub-names they may go by — Rambouillets, Delaines, or Black Tops — and how they have more than doubled the carcass weight, and the weight of the fleece, at the same time lessening the waste of yolk and grease in the wool. And we all know what our own breeders have done with the old Spanish Merino.

These invaluable results are simply the effects of feeding first and last. Of course the breeding has concentrated these results in the best selected sheep, and this has made the improvement permanent by inherited tendency.

We cannot ignore the excellent results of feeding upon the fleece. This is a similar product to the hair of other animals. Every one acquainted with the best breeds of cattle, knows how the hair is softened and increased in thickness upon the skin of those animals having the mellow touch due to the layer of fat immediately under the skin. This is a similar instance to be well considered, for all animals are made of one blood, and amenable to the same natural laws and what happens in the feeding of cattle must apply equally to the feeding of sheep. Profit in sheep farming calls for the most generous feeding, carefully carried through with the utmost regularity as to the quality of food and time of feeding, carefully carried through with the utmost regularity as to the quantity of feeding. A sheep is a restless animal, and it worries if the time of feeding is delayed only a little. Then the shepherd, thoughtless of this habit of his flock, hears the impatient bleating, all of which means the loss of so much to him on account of the loss by nervous excitement and worry of the flock. As a rule we are not sufficiently careful in this regard and thus we do not meet with so much success in this part of our farming or herding. For the sheep under the best management pays three profits — the fleece, the lamb and the carcass — besides fertilizing the land and increasing the crops, thus enabling the farmer to keep more sheep. A well fed flock is the most pofitable property a farmer can own. Some say the dairy is this, but the sheep take the palm from the cows every time. A cow, if fed only for milk, takes more fertility from the land in a year than ten sheep.

Breeding ewes must have shelter, yet they must get out and "rustle" every day that is not too wet. Precautions must be taken in the feeding of ewes carrying lambs, in regard to the quality of their feed. This should be clean and free from mildew. One special need of sheep is pure air. The sheep yard must be the best drained spot on the farm. The sheep must have a dry foot but equally a dry back and a dry bed.

BREEDING AND CARE OF SHEEP.

By Hon. R. P. Fisher, Decatur, O.

[Read at the Farmers' Institute held at Decatur, Brown County, January 25 and 26, 1899.]

The native country of the sheep is probably unknown, but that they were the earliest domesticated of any of the wild animals there is little doubt, for we find them in subjection to man from the earliest historical times. If we refer to the sacred writings we will find away back, near "the beginning," the passage from which we take the quotation "and Abel was a keeper of sheep"; we also find them frequently mentioned during the patriarchal age, and further along no less a personage than Moses, keeping the flocks of Jethro his father-in-law on the plains of Midian; again, when a great king was to be chosen for Israel in the person of David and diligent inquiry was made as to his whereabouts his father answered, "Behold he keepeth the sheep"; and finally when "old things were about to pass away" and "all things become new" when the Christ, the savior of mankind, had been born, it was to the "Shepherds abiding in the fields keeping watch over their flocks by night" that the angels appeared announcing the great event and proclaiming "peace on earth, good will toward men." But it is to the breeding and care of sheep, not their history, that this paper should relate.

Perhaps no country in the world is better adapted to the raising of sheep than ours; the diversity of climate together with the abundance and variety of the products of our soil render it highly favorable for the breeding and improving of the different varieties of this most useful animal. How then shall we breed and improve them? Does every American farmer who keeps a flock of sheep so breed and care for them as not only to keep them up to their present standard but improve them from year to year? Do one-half or one-third of those who keep them accomplish this much? I very much fear that a careful investigation would compel a negative answer to these questions. It is true that much has been done in improving the different breeds of sheep and many of our farmers deserve great credit for what they have succeeded in doing toward improving the flocks all over the land, but very much yet remains to be done and I think most of us need a great deal of education in these things. An eminent writer on these subjects has said: "Let any one who is in any way acquainted with the laws of degeneration, its causes and its fatal results not only in reference to the stock itself but also as regards the pocket of the breeder carefully investigate the subject and it will be perceived that there still exists a fine field for improvement." I also wish here to cite the methods of Mr. Bakewell, the celebrated founder of the Leicester and other noted breeds of sheep in England more than a century ago. "His breeding animals were in the first place selected from different breeds, these he crossed with the best to be had, after the cross had been carried to the desired extent he confined his selections to his own herds and flocks. *He formed in his mind a standard of perfection* for each kind of animals and to this he constantly endeavored to bring them." That he was completely successful cannot be denied.

What may we learn from this? Shall the good farmers of our community be told that they all ought to adopt in full the methods of Mr. Bakewell? Certainly not; with the many this would be impossible, with others more favorably situated it would be a life work that few would care to undertake, but we may all learn from the experience of that eminent man as well as from others that in breeding we should always try to get the best and mate them with the best to be had. We may also learn from it that every man should have some type or standard of perfection to which he wishes to attain and should work at it with patience and a determination to come as near to it as he can.

I will now try to give some ideas of sheep breeding based mainly on experience and will assume that all are beginners, though to all who already have the foundation stock my remarks will apply as well. To the beginner, then, I will say that, having decided to raise sheep, you should look about you carefully and satisfy yourself what breed of sheep best suits your fancy, your farm and your surroundings. Having settled this procure as many ewes as you need for your foundation stock. Be very careful that the ewes are not too old and that they are free from all hereditary or infectious diseases. If you cannot get them of the breed that you prefer, get them of some other breed, for you can, by grading up, do probably as well in the end. When you have secured your foundation stock your next task will be to procure the male with which to mate them and here your very best judgment is again in demand. It is an old and well established idea among stockmen that the sire is half the herd or flock, and this being true it can readily be seen how important it is that this animal should be the very best that your means can procure; he should be of the breed in which you have decided to invest and should by all means be a thoroughbred; he should be a healthy, vigorous fellow of good robust form and free from all deformities and defects. Having now secured your stock you will still find ample room for the exercise of your best judgment in properly mating and caring for them until the appearance of the lambs, and this should be so arranged as to best suit the circumstances of the owner. The usual mating time in this latitude is in November, but, where the surroundings are favorable and earlier lambs are desired, October, September, or even August is often chosen as the best time.

Having now complied with established rules of breeding you will with your first crop of lambs have climbed half way to the top in successful sheep husbandry, and if you will persistently and tenaciously stick to the thoroughbred sire, one after another and year after year, it will not be many years till your flock will, with other proper management, have become practically if not actually thoroughbred, in fact about as good as the best.

But having embarked in this system of breeding, you are confronted with many other cares and duties that will require much thought and wisdom — you must look ahead. When your first crop of ewe lambs has arrived at breeding age, which is generally in the fall after they are yearlings, the culling and selecting process should begin. Every old, infirm ewe should be thrown out; every young one that is not sound and healthy should be discarded, and if you should be in doubt as to whether you should keep this one or that one give the benefit of the doubt to the other side and throw it out; you would better have a small flock that is right than a large one with many defects, bearing always in mind the old rule that the best is none too good. And here let me remind you that at this time you need another male to mate with your new flock, and do not under any circumstances allow yourself to be persuaded that the old one will yet do. Sell him, he ought to bring a good price yet, but sell him any how and go forth and get another thoroughbred.

You should keep up this grading process from year to year, culling the flock annually, selecting and keeping only the best, discarding and rejecting any that are faulty or unhealthy.

I think that this process of grading up in stock breeding is the best course to be pursued by the general farmer; it is always safe; it requires but little outlay of money and the breeder can always be assured that if he will observe the rules which may be understood by all he will certainly and continually improve his stock.

But what shall we say of the breeding and propagation of pure bred stock?

Is this to be discouraged? Certainly not. Let every man who has the means and is so inclined, who has the time, the judgment, the skill, the knowledge of the laws of heredity, of improvement and of degeneration, go forward in this most laudable undertaking, and may success attend him. He should be encouraged by all. The many enterprising importers and breeders of pure bred live stock are a grand and most useful class of men and the results of their noble efforts, their pluck, their energy, and their enterprise have been of incalculable value to the farmers of our country; they are indeed benefactors and are entitled to all praise and all encouragement, for without the benefit of the results of their efforts America would today make a sorry showing of live stock and the system of grading which we have here advocated would be impossible.

The impression that I desire here to make, however, is that the great mass of our farmers and stock breeders are not yet fitted and prepared, if indeed they ever will be, to engage in the breeding and rearing of pure bred live stock as a business. I do not think that as a class we have the time, the means, the inclination, or the talents to make it successful. Of all those who have engaged in it, I believe I am safe in saying that where one has made a success of it at least a dozen have made partial, and in most cases entire, failure. The success of the one was most likely heralded abroad, while the failure of the others was probably never reported. The laws of life that govern the transmission of form, color, disposition and the many other characteristics that go toward making up the ideal pure bred animal are too obscure and too little known to be grasped by the unskilled mind, and those who take the chances need not be surprised if they fail. So I repeat my belief that the practice of grading in the breeding of sheep, as well as all other kinds of stock, is the safest and best for the general farmer.

Now as to the care of sheep, I can say from experience that I enjoy caring for them. Sheep are more easily cared for than any other stock on the farm; they are gentle, timid and harmless, they are the most inoffensive of animals and the lamb has in all ages been considered a type or emblem of innocence and gentleness. Sheep are perhaps the most thoroughly herbiverous of all domestic animals; they prefer at all times to live on grass if they can get it, and if they have it they will not thank you for much else; they thrive on any kind of grass except clover, which they do not seem to relish; they will also eat and "grow fat" on many kinds of the noxious weeds with which our land is infested; indeed, if compelled to, there are not many kinds of weeds that they will not eat and live on. One of our oldest and most successful farmers told me not long since that if every farmer would keep a flock of sheep and plow more land in the fall and less in the spring it would not be many years until most of the foul weeds with which the country is infested would be destroyed. I do not wish to be understood as advocating a steady weed diet for sheep, it may do occasionally and I sincerely wish that we all had enough sheep to kill out all the weeds, but my advice is do not depend upon weeds for sheep feed. Sheep require and should have a variety of food if you expect them to do their best; at this season of the year especially is this needful. In the case of ewes approaching maternity at this time, corn, oats, bran, oil meal, etc., are all useful and requisite if fed in proper quantity and in the right proportion, all of which must be regulated by the good judgment of the shepherd.

Another thing to be very careful about, though care is not always practiced, is overfeeding and keeping the flock in too close quarters during the winter and early spring months. It is bad for the health of the flock and hurtful also to the well being of the offspring. Sheep should be well fed and well housed to protect them from storms and rough weather, but care must be taken not to feed them too much or house them too closely.

When the lambs begin to make their appearance, which is in about five months or one hundred and fifty days from the time of mating, here again the very best of care must be taken and the keeper must be on the alert lest he suffer loss through neglect.

Another thing to be guarded against, which is the most trying, vexatious and discouraging feature of the business, is the ravages of dogs. Those infamous, sheep-killing curs infest every neighborhood and no man who owns sheep at this season of the year can lie down at night feeling safe unless he knows that his sheep are where they will be secure from the maraudings of those worse than worthless brutes.

At shearing time much care is necessary that the clipping be properly done and the wool well handled and prepared for market, but I have not the time to talk at length upon this point.

The diseases and ailments of sheep are many and with all the care and attention that can be given you will be destined to meet with some disappointment and loss, but you should not become discouraged, but persevere and all will be well in the end. You should also remember that in all other branches of live stock industry the same conditions exist, the same rules of breeding, the same laws of heredity and reproduction, as many diseases and accidents to combat, as much care and attention to be given; all these apply with full force no matter in what kind of live stock you invest; therefore stay by the sheep, breed them intelligently and care for them with judgment, and be assured they will bring you honest returns.

BABY MUTTON.

By JOHN B. PEELLE, Bloomington, O.

[Read at the Wilmington, Clinton County Farmers Institute held February 27 and 28, 1899.]

To grow baby mutton at a profit, or at the highest profit, the foundation stock must be of the right kind. I take it for granted that any one embarking in this business will have an ambition to grow the very best, and to receive the very highest market quotation. There is but little profit in growing average crops of any kind, and in nothing will there be greater rewards for the highest attainment than there is in growing the best quality of baby mutton.

Parenthetically, I may state that I have been forced into the production of this delicacy, for parasitical disease, that scourge that Mr. White will tell us about later on, is the arch enemy that I have met, fought and been conquered by. Yet the black cloud has a silver lining and at present I am making tremendous efforts to transfer some of that silver lining to my pocket-book.

The only time to market this product with profit is from the middle of January to the first of April. After April Fools' day anybody can have fine lambs, but high prices have gone "glimmering." In order to meet the demands of the market and obtain the highest prices, the lambs must be dropped in the months of November and December, preferably the former. "But," I hear some one say, "how will you accomplish this? Spring is nature's time for the lambs to appear, and at no other time can they be depended upon." This is an erroneous idea. Winter lambs may be due to the breed of sheep, or to some extent it may be a matter of education and training.

According to H. P. Miller, in the Ohio Farmer, there are but two breeds of sheep that can be depended upon to produce winter lambs with any certainty, and one of them is not a mutton breed, and therefore does not count. There is but one best breed for this purpose, and it is a specialist, as much as the Jersey cow is a specialist, and I would be untrue to my convictions and untrue to the occasion if I did not tell you that that breed is the Dorset Horn sheep. Do you wish authority?

Professor Thomas Shaw, known to every reader of agricultural papers, says: "When the returns are all in it will be found that the Dorset will drop and raise more lambs than any other breed." Colonel Burch, editor of the American Sheep Breeder, says: "For early lambs the Dorsets have not a rival except in the Hampshires." So much for scientific authorities, now for practical men. George Wilbur, of Marysville, one of the pioneer baby mutton producers of Ohio, after three years of experimenting, says: "I am in it for cash, and have had enough of experimenting, and have purchased Dorset rams." The Southdown, the Rambouillet and the Dorset men furnished him rams for a competitive test, and the Dorsets were in the lead in every point except one, and particularly in the lead in the last point — cash returns. H. P. Miller sings the same song, and I will give you two facts later on that prove the same thing.

But to return to our lambs. Although the grass may be good and the weather pleasant, let the first of December find them in the fold to go out no more until summer comes again. Good barns are desirable, but not essential. If you can do no better, make a house of straw and fodder, which, if made all right, will answer every purpose. The lambs do not require warmth as much as protection, and to get the best results you must confine them in narrow quarters. I know there is no more inspiring sight than to see forty or fifty lambs racing up and down the pasture like a pack of school boys just out of school, while the ewes are taking their morning meal, but every race means ounces, it may be pounds, of mutton wasted. Keep them busy putting on fat and let them exercise cracking corn with their teeth, and the silver lining of your pocket-book will be thicker for it.

When the lambs are about two weeks old they will begin to eat, and you must provide a separate table for them. It may not improve their manners, but it will their weight.

There are two mottoes the baby mutton growers should have worked in silk floss on perforated cardboard in letters eight inches long, and hung in the sheep barn. Each consists of three words. The first is found in St. John, twenty-first chapter, fifteenth verse. It is, "Feed my lambs." The first word of the second is fat, the second is fat, and the third is fat. On these two mottoes hang all the lambs and your profits. I am a self feeder very satisfactory. Theoretically this will not do, but practically it is all right, for it brings the results, and results are what we are after. I believe in a scientific balanced ration, and labor to that end. The principle that governs our feeding is to give them what they want and when they want it, and as they will eat a dozen times a day, there must be a constant supply before them. Bran is a good thing to start them on, soon you can add crushed corn, and later oil meal. The proportion of crushed corn must be gradually increased, for corn is the sheet anchor of our hopes. It was suggested to me to give them ear corn in a trough, and I did, but soon found that if I shelled the corn for them they would eat three times as much as they would if they had to do the work themselves. So now our lambs are eating nearly an ear of shelled corn per day each, and I cannot see that they eat any less of the combination from the self feeder. Good clover hay is indispensable and must be kept constantly before them. The lambs must have it if it costs ten dollars per ton. By the above program the lambs should be ready for market in from eight to twelve weeks.

New York is probably the best market in this country. Of course they must be sent dressed. The details of the preparation for market would probably not be interesting or profitable to this audience, but briefly it is this. On Tuesday afternoon we select the ripe lambs, those weighing from fifty–four to sixty pounds, and they are dressed by removing head, feet and entrails. They are hung in a cool place over night (during very cold weather in the cellar), and on Wednesday morning they are first attached to a light wooden frame, three feet long, eight inches at one end and fifteen at the other, and securely fastened. They are wrapped in new muslin (such as you buy thirty yards for one dollar), and sewed up, and then in burlap. To each lamb is attached a shipping tag and they are delivered to the express messenger on the 1:35 P. M. C. & M. V. train at Sabina, and in twenty–four hours they are in New York city ready for Friday's market.

Now, the question is, does it pay? Here is the record for this year: On January 25, 1899, I dressed one lamb for a sample and shipped to W. H. Cohen & Co., New York, to try the market. On January 27 he wrote me as follows: "Your lamb arrived very early this morning, and sold immediately for eight dollars and fifty cents. We never saw a finer one." If he would say that of a three–fourths blood Dorset, what would he say of a thoroughbred? "We had heavier lambs, but they were longer and looked bigger than yours, and sold for less money. Yours was built snug and close together. We sold to one of the fanciest markets here, who told us to write the shipper to have more come right on." I at once sent five more, and he wrote me they were frosted inside, but the quality sold them. (Butchered in zero weather.) They sold for eight dollars each, the highest quotations that week. My check for the first six was forty–two dollars and sixty–seven cents, average seven dollars and eleven cents. The following week I sent eight more, and they sold for eight dollars and fifty cents each. My check for the eight was sixty dollars and twenty–five cents, average seven dollars and fifty–three cents. I sent six more last week and expect a check tonight for at least forty–five dollars.

As the season advances and the weather grows warmer we market alive in Cincinnati. At noon we select our lambs and place them in an apartment where there is a fresh supply of crushed corn and oil meal, shelled corn, clover hay, and water. By 4 o'clock they are stuffed as tight as ticks when they are turned out for a few minutes to say goodbye to their mothers, and then they are stuffed a little tighter. We ship in a crate holding five or six lambs and in the corners of the crate we tie bunches of bright clover hay. The object of this cramming is to prevent fretting, for your baby mutton will melt like snow balls if favorable conditions do not surround them. They go to the city on the evening Midland and are sold next morning.

There are two things about this business that are especially desirable. One is, it gives profitable winter employment. I read of a dairyman not long ago who turned his cows dry in November so that he could do his year's visiting during the winter. If you should embark in the winter lamb business you had better do your visiting before you begin or put it off until next year, for the first thing in the morning, the last thing at night and "oft in the stilly night" there is a lamb that needs attention. The owner needs to live with his lambs. The other thing is, it brings in money just at the time when it is needed.

Now, I am not at all afraid that all the shepherds here will rush into the business of producing baby mutton and spoil my trade. You could not do it if you wished, for most of you have not the right kind of foundation stock, and the rocks you will run against and the pitfalls you will fall into will discourage most of you. I shipped three last year and received less than three dollars each because they were improperly dressed. At another time I shipped four and the weather turned so warm that the four only brought six dollars. I have had my share of troubles for the past six years and this is the first time returns have been satisfactory. But, receiving the highest market quotations on every shipment proves that I have the right kind of lambs and have learned when and how and where to market them.

SHEEP AS A SPECIALTY.

By C. C. Shaw, Newark, O.

[Read at the Granville, Licking County Farmers' Institute held November 30 and December 1, 1898.]

What I purpose to consider particularly in this paper is the question of sheep farming as a specialty. Would it be a safe undertaking? Would it be a profitable one, compared with mixed farming as practiced by the best farmers? I think sheep farming as a specialty, if properly managed, would pay in this country and pay well; that the net profits would be far above what is made by the average farmer. The day is past when there is any necessity for a man raising nearly everything he wants on his own farm. It might have been so once, just as stage coaches were once necessary; but times are changed. Communication and transmission are so easy nowadays, and division of labor, one of the grandest ideas of the nineteenth century, can be applied to the farm as well as to the factory.

That it is better to do one thing and do it well is seemingly truer today than ever before, and especially on the farm. Cannot each one of us call to mind some specialist who by putting his whole energy toward the success of one object has succeeded by sheer force of will? I do not recommend that all other farm stock and products be set aside altogether. No, not that; only to subordinate all others to the special object in view. One man may raise horses, another cattle, and another sheep. A specialist has the best chances of success because he can devote his whole energy to the object in hand. All the crack breeders of celebrated herds and flocks and successful men generally are specialists in their line. I know there is a proverb that we should not have all our eggs in one basket, but it is more true that there is danger in having too many irons in the fire at once. Some are sure to burn for the want of attention at the proper time.

Of course specialists have reverses as well as others, but the specialist is better able to minutely examine all his procedure and find out wherein he has erred and guard against a recurrence in future. The prices of all produce fluctuate, ebb and flow like the tide of the ocean, sometimes above, sometimes below, the cost of production. Wool and mutton are no exception to the general rule, but the immutable force of action and reaction so well known to all will regulate this more easily in the products of the sheep than in other farm stock.

In this country there are perhaps few if any farms devoted entirely to sheep, and it is a question open to diversity of opinion as to how many sheep a farm will carry or produce per acre. Those who have not had experience will differ widely on this point. Some have an idea (although I think an erroneous one) that sheep above all other animals are particularly hard on pasture. It is true they will do well on pasture too short for cattle to thrive on, and if run together they would be hard on cattle. On the contrary pasture grazed close by sheep is something like cropping a hedge: it will thicken up in the bottom and rather improve than otherwise; and while sheep will do better than other stock on short pasture, in rapid growing seasons they can be fed on long pasture with less waste than if horses or cattle were fed on it. Their small feet do less damage in tramping, and anything left can be made into good clean hay. The number of sheep that could be kept or produced would depend on the kind or breed. No doubt some kinds consume very much more food than others.

There are two distinct classes of sheep farmers, the prosperity of each depending largely upon the other.

The first of these are those who have pure bred or what may be termed ram-breeding flocks. In England ram breeding is a sort of business of itself, and no doubt in time it will become so in this country. This branch of business is the very foundation of successful husbandry, and when properly managed may and will be more profitable than breeding for wool or mutton. On the other hand it is attended with greater risk, more chances of failure, requires more capital, more skill and more experience to ensure success, and in fact there are comparatively few who are by nature or experience well fitted to succeed in this branch of the business.

The man who insists that a sheep is a sheep; that so much food will just make so much wool and mutton; that the breed is all in the feed, would have no chance of making a success of pure-bred sheep, and is not likely to do much good with any kind. But fortunately there are men fitted to still further improve the best of the pure bred sheep of our country, and it is to them the owners of the more common flocks must look for sires to improve their sheep. No man should be satisfied with a cull from even the best flock. A cull in the breeding flock (if only a ewe) will produce another cull, and the second cull is likely to be worse than the first.

The other class of breeders, and by far the larger class, are those who breed for wool and mutton. The value of any breed of sheep depends entirely on the amount of money they will return in wool and mutton for a given quantity of food consumed. In selecting sheep to breed from we are too apt to be led away by the mere size of the animals, overlooking the more important point, that of quality. It takes no more food to produce a pound of wool or mutton of the finest quality than it does one of the poorest. Now if that be the case it needs no argufent to show that there is more profit in producing the finer quality, such as will command the top price when put on the market. The question is not how much for one fleece of wool or one carcass of mutton, but rather how much for one acre of food consumed, no matter whether it is consumed by one or two sheep.

Among the advantages of raising sheep, as compared with other stock, the cost of fencing would be very much less. This alone would be quite an item. Movable hurdles, sufficient to hold sheep, that can be set wherever required, can be made at a cost of about fifty cents a rod. As scavengers of noxious weeds there is no stock equal to sheep. They scatter their droppings more evenly over the land, they require less expensive buildings, take less labor in caring for them, and will pull through a dry season better than some other kinds of stock. I believe a pound of mutton can be produced at as little cost as a pound of beef, and will bring as much or more in the market. This leaves the wool in their favor.

A sheep farm need not necessarily be an expensive one: a rather heavy soil is the best. Farms rather far from market, and especially from towns or villages where a lot of worthless dogs are kept, would be well suited for sheep farms.

Now to estimate the probable number of sheep that could be raised per acre, I think that about two to the acre would be a fair estimate, and they should bring an average of from five dollars to six dollars per head. If merinos, more could be raised, and if some of the larger, coarser kinds, perhaps less.

If I were to say what kind I think the most profitable some might imagine me influenced by prejudice. However, I will venture to say that if one should start with the best of the common ewes of our country and breed them to a good ram of any one of the best mutton breeds, and continue to follow it up with one of the same breed every time, the result would be satisfactory. There is an advantage in making one breed a specialty, even in breeding for mutton purposes. In doing so it is more easy to determine what progress is made. It is easier to become acquainted with the characteristics and good qualities of one breed than of a number, and this is very important in selecting breeding stock, a mixture of too many different breeds leading to confusion.

If we are once fully convinced we have started wrong it is better to change than to keep on; but the man who has been fortunate enough to start with the southdowns can go right on — he's all right.

The down sheep have advantages that are too often overlooked. Owing to the fact that the fleece is more compact and smooth on the surface they never wet to the skin by being exposed to rain or snow. The lambs when dropped are smarter and better able to help themselves. Being rather smaller and naturally more lively, they are better adapted to come through a dry season in good shape. However, just here it is better to provide some kind of soiling crop and not allow the flock to shrink for want of sufficient food. Another consideration of no small importance is that down wool (southdown at least, and I think it applies to all the downs), does not cot or mat. For cotted wool dealers insist on a third off the price. This means so much off the profits.

There are some who will hardly believe that two sheep can be raised annually on an acre of land, but with the experience I have had with sheep I believe it is quite within the range of possibility, and the farm will improve from year to year. To do this say on a farm of one hundred acres there should be about seventy acres in grass, or rather sixty acres in grass and ten acres in rye. This would afford two weeks of early pasture, allowing the other pastures to get a good start before turning on them. The advantage of this is too well known to require any comment. This rye would still produce two cuttings of feed even in the dryest season. Now with seventy acres in pasture there would be thirty acres for grain, roots, and green crops. Suppose we take twenty of this for grain, oats, peas, and a mixture of the two. This would furnish all the grain required, and if cut a little green the straw would make good winter feed. The balance (ten acres) would be for roots and green feed. The green crop should be composed of several varieties. Corn might form a part. A mixture of oats and peas is very good, but perhaps the best is rape. These will bear cutting twice, and if fed principally through the month of August, when frequently the weather is hot and dry, it would save the pasture and bring the sheep through in the best of shape.

A certain number of the very best ewe lambs should be selected to put in the breeding flock, allowing as many of the older ewes to be culled out each year. The balance of the lambs should be pushed ahead and made ready for market as early as January or February, when they usually bring a good price. A good way of disposing of the older ewes is to cull them out a year ahead, say in August, breed them as early as possible, feed them well, sell the lambs early and have the ewes fit for the butcher soon after the lambs are taken off. In this way the flock should make a return of from ten to twelve dollars per acre, with a comparatively small outlay.

On the other hand to stock a farm with some of the more popular breeds of pedigree sheep the figures would show better results. This would require more capital to begin with, but if properly managed, and should we produce but one really good sheep to the acre, this would give a return of at least twenty dollars, which would show a good balance sheet at the end of the year.

It is a mistake to suppose that there is not plenty of room for many more to engage in and make a success of this branch of the business; nor is it absolutely necessary to get to the very top of the ladder in the show ring to be able to sell good pedigree sheep. The time is coming and now is when pure bred sheep, no matter how well bred or what their individual merits may be, if not eligible to record in their respective flock books, have very little value if any above what they will bring in the market for mutton. Those who are starting with any of the improved breeds will do well to see that the matter of pedigree is all right, as no number of crosses will otherwise entitle them to be admitted for record.

For good sheep with pedigrees all right there is a demand for all that can be produced, and will be for years to come. Individual merit is one thing and pedigree is another. To those who combine the two in the same animal in the highest degree success is sure.

PARASITIC DISEASES OF SHEEP.

By John D. White, Wilmington, O.

[Read at the Wilmington, Clinton County Farmers' Institute held February 27 and 28, 1899.]

Parasitic diseases are the worst enemies of the shepherd, and when neglected entail great loss. I surely feel my inability to deal with such a subject, as it should be elaborately discussed in an assembly like this. However, he who has been properly and carefully attentive to his business in the rearing and feeding of sheep for several years has doubtless learned something of the conditions that must exist in order that he may expect a fair return of profit on his labor. What I shall say will mainly be observations of the diseases as we have found them and as they apply to our own locality. I am glad, however, to say that the southern Ohio flockmaster has little to fear (with a few precautionary measures) from any of the parasites, unless it be the parasite of free wool, or the recent lamb disease that has caused considerable alarm. This disease is caused by what is known as the twisted strongylus, or stomach worm, which has proven to be very fatal, some authorities placing the loss of lambs in the Central States alone at three millions in 1896. These little worms may be found adhering to the mucous membrane of the stomach. Most authorities agree that the only way to combat the disease is in the use of preventives, among which I have heard turpentine highly recommended. I am inclined to think that by careful tests we will be able to find an effective remedy. Those who lose lambs the coming summer should make careful examination to find the exact condition of the intestines and report results to their fellow flockmasters. Then we can discuss the matter of remedies, for we must prevent this disease if possible, or at least reduce the risk to the minimum, since there is undoubtedly more money in raising lambs on the farm today than in anything the farmer can do if properly equipped and these losses can be avoided.

To speak of one of the most common troubles of the sheep, and I may say one of the easiest to manage, I would mention the tick. The adults are about one-fourth inch in length and have a short flat body. Each leg has two sharp claws, the proboscis has elongated pieces with teeth at their ends and with these it perforates the skin, and sucks up the blood. How quickly the experienced shepherd can tell when the flock is infested with these bothersome pests! Conditions: uneasy, restless motion, pulling of wool, rubbing against fences, trees and stumps; and it does not take a close observer to see at once that he is feeding at a loss. The man who applies the proper remedy and clears his flock of ticks does not have to figure long as to the matter of pay. Go with me, if you will, to the field on a summer day, observe the properly handled flock as they quietly lie beneath the oak tree's friendly branches, or contentedly nip the grass as they make their accustomed round over field and through wood, impressing the owner at once of the gain in prospect.

Before giving my method of destroying ticks, I wish to speak of another trouble that may infest the flock, and yet the farmer be ignorant of its presence.

I refer to the very small, red louse, almost invisible to the naked eye. These lice lay their eggs at the base of the wool fibers, and they are held to the wool by a sticky substance. These parasites live on the blood of the sheep, and cause intense itching in biting through the skin. The wool becomes gnarly and worthless where the pests attack the skin to any great extent. I mention it in connection with the tick, because the remedy used for the tick will also destroy the louse if present. To destroy ticks, we dip the sheep twice each year. We have a machine constructed especially for the purpose, consisting of a vat which will hold about one hundred and seventy-five gallons of water, leaving room for slatted crate, containing two or three sheep, to go down into it without running it over. The crate is lowered and raised by means of a roller, with ropes running through pulleys attached to it. One man can handle three heavy sheep. We have a chute eight or ten feet long running up to edge of vat, with a small gate at each end. At opposite end a dripping pen with floor slightly inclined, so as to run the solution back into the vat. We keep the sheep in the liquid about two minutes, then let them remain in the dripping pen while more are dipped. We use a forked stick to handle them while in the dip, submerging the head the last thing before raising them up. The preparation used is chloro naptholeum, which I consider one of the best disinfectants for dipping purposes, also as a preventive of diseases among all kinds of stock and fowls. The cheapest and most effective time to dip is immediately after shearing, while the wool is short, at which time we thoroughly dip the lambs also. Every farmer who has given the matter attention, knows the ticks leave the old sheep and attack the lambs after shearing.

The second dipping is done late in the fall before the sheep are put into winter quarters. Both dippings can be done for about three cents per head. The dip does not injure the wool in any way, but we believe increases the yield to some extent. If I were handling any of the open wool breeds of sheep I would continue to dip twice a year, as they are more susceptible to disease, and are scarcely ever free from ticks. We may find after dipping our fine wools twice for a few years, and getting them thoroughly cleaned, that one dipping per year will be sufficient. In regard to scab and footrot, it is needless to say these are about the hardest to manage, if allowed to get a firm hold, of any disease that ever attacks the flock. Fortunately they are not diseases that flourish in this locality, and never bother unless our sheep come in contact with infected flocks which are brought or shipped in from other points. The scab is caused by an insect known as the scab mite or itch insect. Its effects are very rapid and destructive. In most wool-growing countries it has become the subject of legislation. Dr. Curtis, in his work on animal parasites of sheep, states that a single female scab insect is capable of producing in three months one and one-half million of progeny. It has already been shown by experiments that the scab insect can live after being subjected to intense cold, and for considerable time about sheds, yards, and fences after the sheep have been removed. The egges hatch in about ten days, from which time the insects mature in about six weeks; hence the necessity for two or three dippings at intervals of two or three weeks. If allowed to run on, scab soon involves the entire system of the sheep. They will not only lose all the wool, but in most cases die. We have been able to check the footrot in its early stages by driving through slaked lime. This can be done very rapidly by constructing a chute with a trough-shaped bottom in which is placed five or six inches of lime. If this should fail we have a remedy which we apply with a small paint brush after paring off all superfluous hoof. I have never known this remedy to fail to effect a cure. As some one present may sometime have occasion to try it I will give you the recipe: Powdered blue vitirol, one pound; verdigris, one-half pound: linseed oil, one pint; pine tar, one quart.

Then we have the grub in the head, caused by the gadfly, which slightly resembles the small brown bee. It makes its appearance about the middle of May. This fly deposits its eggs on the edge of the nostrils, and they at once begin to work their way upward and unless expelled by sneezing finally reach the frontal sinus of the head and there mature, invariably causing death. There is also the small hair-like, lung worm that is generally taken in from watering places, like stagnant ponds. These worms work on the delicate membrane of the lungs and clog up the air passages, causing the disease commonly known as paper-skin or husk.

Several others might be mentioned that so far have not troubled us on our well drained farms, yet every sheep farmer should study the nature and character of these parasites in order to be better prepared to combat them should they appear.

WHAT OF THE BEEF ANIMAL?

By A. L. FRENCH, Wakeman, O.

[Read at the Farmers' Institute held at Wakeman, Huron County, December 21 and 22, 1898.]

Realizing the importance of this subject to the farmers of Ohio I wish to present some thoughts for your consideration. I may not succeed in telling you anything new, but I hope to bring to your remembrance a subject that seems to have been neglected, if not altogether forgotten.

The importance of the beef animal, in feeding the world, needs no argument on my part; well ripened beef is preëminently the standby among all the meats; a person need only to look at the reports from one of our great markets to be convinced of the truth of this statement. Such being the case, does not this great industry deserve a little more attention from the farmers of our state?

There is no reason why we should not produce as fine beef as is produced in any part of our broad land. We are growing as fine mutton and pork as any section, why not beef?

There are many reasons why we should and several reasons why we do not. The first reason why we do not is that we have allowed our foundation stock to deteriorate through neglect to grow or import first-class sires of one of the three great beef breeds.

The use of a first-class, pure bred sire is, to my mind, of the utmost importance in the growing of choice beef, and when I say first-class, pure bred, I *mean* first-class, as there are any number of so-called pure bred beef bulls that are fit only for bologna or to be used by our Spanish neighbors in their national amusement.

A sire of first-class animals of the beef kind should be an animal with two square ends, short meat legs placed well apart, a long, straight back, ribs well sprung, a straight underline with flank well down, a prominent, thick brisket, a neat, nicely carried head, wide between the eyes and at the poll, short nose with large nostrils, and, over all, a mellow, fine-haired hide. This last I deem very essential. Such an animal, if well bred, is almost sure to produce offspring of superior quality.

Now one word as to the care of this first-class sire. I do not believe, as some seem to, that an animal to be used as a breeder should be kept as thin as a rail and always on the verge of starvation. My belief is, and I am not alone in this theory, that a sire to produce first-class, easy-feeding animals should be kept in as good condition as is possible and yet retain a large store of vigor, as I believe an animal can and does, to a certain extent, transmit to his offspring his condition (feeding quality) at time of copulation.

And why not? How were the fine breeds brought to their present state of excellence? Simply by selection and feeding through many generations. Then why will not deterioration begin as soon as these conditions are neglected?

Of course the kind of feed on which an animal is kept has much to do with the stamina of the animal. I should feed very sparingly of corn to any breeding animal. Let the grain ration be a mixture of bran, ground oats, oil meal, and, in cold weather, a small portion of cracked corn; if you have hogs to follow, shelled corn will do as well. With clover hay, corn ensilage, and, in summer, grass for rough feed, you will be sure of a breeder and good, thrifty offspring.

Now how shall we care for and feed the elegant little calf when he has arrived? This is a question upon which cattle men differ greatly, some maintaining that a good calf can be grown on skim milk. Well, I believe he *can*, but will he be? I think, from observation, about one in ten of the calves fed in this manner will grow into steers that will top the market.

Is this the style of feeding that will return the most profit to the feeder? I believe not. I believe for the majority of farmers there is a better and more profitable way to grow this business calf, and that is to let him get his rations in the way nature prescribed until six months of age. Keep the calves by themselves and bring the cows to them twice a day. If you do not want to use all the milk from a cow for one calf make her feed two. Any good cow will raise two calves in a proper manner if the calves are taught to eat grain by the time they are three or four weeks old, which they will do if given encouragement.

Begin with a very small feed, increasing gradually until the animals are getting all they will clean up of the same kind of grain recommended for the bull.

When the calves are weaned they will hardly notice the loss of the milk, and they should weigh about five hundred pounds at six months and should gain from seventy-five to one hundred pounds per month until one year old.

I believe there is money in this style of animal. In fact, I know there is, because a calf grown in the manner described is worth, at six months of age, from twenty to twenty-five dollars, and there have been hundreds, yes thousands, of calves sold in the Southwest this fall and last at twenty-five dollars that had never tasted grain.

Would it not pay the farmers of Ohio as well to grow their own calves, as to bring them two thousand miles to feed, as a number have done the past fall? But these calves were dropped by well bred cows as well as sired by pure bred bulls. This brings us to another point which is very important, that is, growing and selecting cows from which to obtain these fine beef cattle. The very best on the farm should be used and the heifer calves saved for future breeding. In this way we can obtain a first-class herd in a few years at very little expense.

If you get over-stocked with heifers, don't be worried, as I have seen just fairly good grade yearlings of one of the beef breeds sold the past summer for from thirty-five to fifty dollars, — not a very slow business.

I have said nothing about exercise for the breeding stock as there is a great difference in animals and breeds; some breeds are more vigorous than others and require less exercise. It should be ample at all times to insure good health and vigor, and each breeder must be his own judge as to the amount necessary.

The hornless breeds can be fed in large, roomy, well lighted and ventilated stables, and allowed to run loose like a flock of sheep. They seem to get about as much exercise as they require.

In closing let me say:

Breed the very best cattle you can.

Take care of them the best you know how, or can learn.

Do not be afraid of getting them too fat; if you think they are too fleshy, try taking it off with the curry comb and brush.

Always speak kindly to your cattle.

Feed at regular hours.

Grow your own feed as far as possible. Your farm will grow richer, your pocket-book fatter, and you will never regret your connection with the noble beef animal.

ADVANTAGES OF EARLY MATURITY IN FARM ANIMALS.

By JOHN A. FORNEY, Plainfield, O.

[Read at the Farmers' Institute held at Plainfield, Coshocton County, November 30 and December 1, 1898.]

We live in a fast age. We rise and say good morning to our friends and neighbors for miles around, limited only by the length of wire connected with our telephones. We sit down to dinner today in our own family circle and before the next sunrise we are in New York or Chicago, as our business demands. Such things were not possible a few years ago.

But while the genius of man has been storing the lightning for his own use and harnessing the steam to his car wheels, it has also been busy in other lines. Today a colt is foaled; four years from today this colt is a mature horse with a full mouth and goes to market at the top price he would ever bring. Today a calf is born; twenty months from today he is a finished Christmas beef and tops the market at the very highest selling point of his life. Today a pig is farrowed; in six months this pig is a mature hog and demands the highest market price. These are results of early maturity. How many of us can remember when these results were not thought to be within the range of possibilities! Why are they advantageous? What does it mean in dollars and cents to put a horse on the market in a finished condition at four years instead of five? It means the saving of one year's keep, twenty dollars; interest on the price of a horse for one year, six dollars; risk of life one year, five dollars; total, thirty-one dollars. It means that you can put thirty-one dollars extra on the four-year-old horse and still be the gainer and we all know that that amount extra will keep him in prime condition every day of his life up to this time. Feed the colt liberally, make it fat on the right kind of feed, and never let it get poor. Once, in conversation with a great Scotch feeder, he made this remark: "You Americans lose your greatest chance to develop your young horses by not feeding in the summer time while on grass; then is the time you can make the greatest growth at the least cost and the least danger." I have thought of this remark often; it will bear careful study. Do you know that a calf will grow more pounds per day than a three-year-old, and you may feed them both all they will eat of the very best feed? If you do not, think about it; it is a fact. Why have the show-rings of Great Britain dropped all classes for cattle over two years old? Because the margin of profit narrows with age, and our British cousins have not been slow to find it out. A calf of one of the beef breeds (and no one should think of making beef of any other), if properly handled from birth, should, at twenty months old, weigh thirteen hundred pounds. He will top the market in the greatest cattle market in the world, Chicago. The days of his most rapid growth are over; why keep him longer? I know the opposition will say that cattle kept on this high pressure plan will not eat such rough feed, but I do not wish to winter my calves and yearlings on a straw pile, nor make them bite the grass to the dust, just for the sake of getting to feed a two or three-year-old, at twice the cost, which will make less growth per day than a calf six months old.

This early maturity idea furnishes the solution to the gravest question now confronting the cattle feeder, viz: "Where shall I get my feeders?" Buy the kind you want or could raise; if you cannot, the only thing left is to raise them. But to keep them till three years old before putting them on the market,. as the prevailing custom now is, necessitates the keeping of a great many cattle. For instance, if you want to put off ten head each year, you must keep ten cows, ten calves, ten yearlings, ten two-year-olds, and ten three-year-olds, making in all fifty head of cattle. While by the other method you would have at no time more than thirty head, and four months in the year but twenty head, and that four months in the winter time, when it suits us best to have the fewest possible number. Another advantage which would be well for us to think of, is that the younger an animal is, especially the cow, the more thoroughly it digests its food. Hence there is less loss in feeding grain to young cattle than to older ones. If feed fed to a steer under twenty months old will make more beef than if fed to an older one, and that beef of the highest market price, where is the propriety of feeding the older one?

The feeding of hogs, or rather pigs (for we don't expect to keep them on our hands until old enough to be called anything else, unless by some misfortune over which we have no control), is very similar to the feeding of cattle; that is, in regard to the most rapid growth being the most profitable. The theory of scantily feeding a pig until he gets more bone and frame to feed on is all wrong. Life must be sustained every day, and every day we can shorten the time of reaching the best market weight is that much gained. The difference between making a pig weigh two hundred pounds at twelve months old and two hundred pounds at six months old, is the feeding of enough feed to sustain life one hundred and eighty days for nothing.

Think of it, brother pig feeder! Have we learned this lesson well?

Our profit lies not in how little can we keep the pig on, but how much can we get him to eat and digest properly. If you will feed a pig all he will eat of the right kind of feed, he will have bone and frame enough to carry his weight up to the most profitable time to market him.

I have only mentioned three kinds of farm animals, because they are the ones with which I have had the most to do, but I believe as strong a plea may be made for the early maturing of all other kinds as of these. Rapid and continuous growth is the key to success in these days of keen competition and great production. If you would have a large animal of its kind, you must grow it while young. If neglected or stunted while young, no amount of care and feed will make it what it might have been. After its bones have hardened and it takes on its stunted form it is impossible to make it reach that high standard which nature intended it to attain, I have tried to show you some of the attainable results. If any one thinks I have overestimated the capacity of our improved animals, I would be pleased to point him to a horse that weighed sixteen hundred pounds at the age of one year, to a calf that weighed eight hundred and sixty pounds at eight months old, to a pig that weighed two hundred and nineteen pounds at six months old. How were these extreme weights secured? By the intelligent feeding of well-bred animals. Don't waste your time, feed and patience on scrubs. It will not pay you.

PRACTICAL HOG RAISING.

By Charles Haines, Centerville, O.

[Read at the Farmers' Institute held at West Carrollton, Montgomery County, December 28 and 29, 1898.]

On the subject of practical hog raising the writer would say first, having selected your place or farm you should consider whether you will be a breeder in the highest sense, a mere dealer or a raiser. This may seem a foolish distinction, but it is a serious one and the determination as to which character will be assumed marks an event in life. It is not every man that handles hogs that can lay claim to the appellation of a breeder. There is no great skill in merely raising pigs, a few rules easily understood and applied will enable any one of ordinary intelligence to be reasonably successful so far as numbers are concerned. In fact the animals if left to themselves will propagate their species, as is clearly demonstrated by the action of wild and common domestic animals. The man who has no experience worth mentioning can raise hogs and supply feed in a humdrum sort of way that will produce pork, but whether at a profit or loss he does not know and never stops to consider. This, however, is merely mechanical or instinctive work and is not breeding swine in that higher and better and most profitable sense. The raiser will continue to supply meat at ordinary prices while the breeder will find a market for his stock at much larger and more uniform prices.

There are in this country two distinct and separate classes of swine breeders, the one being he who only breeds and feeds for pounds and the other the professional breeder. In either case thoroughbred animals are a necessity in order to be successful. You can buy thoroughbred stock at prices that will range from ten dollars up.

There is one very important point that every hog raiser should observe in the selection of his breeding stock, and that is the feeding or fattening qualities in the stock he is using. A good knowledge of pedigree will play a very important part in the selection of breeding animals; there is as much difference in different breeds of hogs taking on fat readily with a given amount of feed as there is in a large hog and a small one. This is one of the good points to be obtained in a knowledge of pedigree. Take the horsemen of our day; there is much to them in pedigree. You would not take a Clydesdale or a French Norman to produce the two-minute animal. Neither would you with the hog select the long legged, long bodied, long snouted, uneasy, restless hog to make pork quickly with a small amount of feed. On the other hand, you want a hog of compact form, short head, quiet disposition. This kind of a hog you can crowd rapidly and in the course of six to ten months he can be made to weigh two hundred and fifty to three hundred and fifty pounds. One thing should always be remembered, that pigs will take on fat more readily than older hogs.

The profit lies in getting to market promptly and often. No breeder or feeder loses anything by constantly keeping his hogs in a condition ready for market. Care, judgment and skill pay proportionately as well in raising porkers as thoroughbreds, but remember that life is too short to waste in feeding scrubs; the lower the price of pork the more important it is that the farmer have the best machine to work up corn at a profit. Pigs intended for pork should be crowded as rapidly as possible to be the most profitable. The advantage of growing improved stock does not lie merely in its better adaptation to the market wants and to the fact that it will respond more promptly and continuously to feed; the early age at which it matures is one of the sources of profit to its owner. Early maturity is chiefly a question of feeding for generations with a view of making rapid and continuous growth, the early maturing quality being transmitted, as it gradually increases, by heredity. Breeding at an early age also probably has much to do with the creation of the quality. It is possible to push it so far as that the results will be inconsistent will full and healthy development, but if this be avoided early maturity is one of the most valuable attributes of the improved animal.

As to the breeds every one must be his own judge. The writer has full faith in the Poland-China as being the most profitable, both to the feeder and the professional breeder. In his judgment they come nearer meeting all the requirements for either breeders or feeders than any of the distinct breeds, of which there are some good specimens.

If you have not had much experience, begin on a small scale and increase slowly until you have a liberal supply of it, for it matters not how much theory you have you will learn that it takes experience to insure success.

As stated before the profit lies in getting to market early and often. If big hogs are bringing the most money, hold over until early in the second year of life; if very fat hogs are demanded, make the porkers respond to the demand, and if more lean is desired, market before they get so fat. The best results come to us only as the result of labor, patience, courage, ambition and experience.

As to the feeds and manner of feeding nearly every breeder has his own way of doing. I have never been an advocate of cooked feeds for hogs, young or old. Humanity is accustomed to being fed in the main on cooked food and because it is more palatable to man it has been assumed that it is also more palatable and even more digestible when fed to domestic animals. This is by no means clear, however, and in fact the results of numerous experiments are all the other way with but few exceptions. More than a dozen different series of experiments have been undertaken to determine what effect cooking or steaming has upon the flesh and fat making power of various feeds, and in nearly every one of these the result showed that a given amount of feed would make a larger gain uncooked than cooked, with a possible exception in the case of potatoes, in which the proportion of albumenoids is very small and the starch very large. I would say, provide your hogs with good, wholesome feed, changing the feeds frequently. Do not feed corn alone but with it give slops made from ground feed. In the winter when the weather is very cold feed liberally of corn at night and no slops, unless the slops are fed warm, as the corn will help to retain the animal heat, the slops having a tendency to cool and chill the animal. In the morning, when they have the day and warmth of the sun (if there be any sunshine) in which to exercise and retain the animal heat I would feed slops and less corn. In the hot days of summer feed plenty of slops and less corn. This manner of feeding will keep them cool; they will worry less, thrive better and give good results. Another thing, I would rake up and burn to a charred condition all the corn cobs, water the charcoal thus obtained and sprinkle it with salt and sulphur. This I consider one of the best, if not the best, preventives of hog cholera and other diseases known among swine. In the winter provide your hogs with shelter and warmth, in the summer with good shade.

One of the first elements of success in the breeder and feeder is constant watchfulness. The breeder ought not to expect to jump at one leap to the pinnacle of greatness as a breeder or feeder; no man has ever done so; on the contrary, it will take a little common sense and experience. The professional breeder should delight in his calling. It will keep him in close contact with his herd and will make their company more attractive. It will prompt him to watch the development of the different individuals, the effects of different kinds of feeds and the result of different combinations of blood. It is time well spent and an education that can be obtained in no other way.

In conclusion let me say that all cannot follow the same line of breeding and feeding. As to myself, I do not think it would be profitable or practical to breed and raise hogs alone for pork. Professional breeders sometimes realize more money from the sale of a single animal than a good many farmers do for their entire crop. To my mind the most practical way is to strive to produce perfect individuals. When we have produced this kind of an animal we have also produced the most profitable kind of a hog for the feeder. The end of the hog is the pork barrel, then fill the barrel as quickly as possible.

RAISING HOGS FOR MARKET.

By Isaac A. Hall, Quaker City, O.

[Read at the Farmers' Institute held at Barnesville, Belmont County, February 10 and 11, 1899.]

Some of you may think that you cannot raise hogs for market at the present price and that you would better sell the feed. Well, my friends, we will agree with you that you can not raise hogs for market, at the price they are bringing today, if you will agree with us that there are many other things that the farmer raises that he could buy as cheap as he can produce. If we should all stop producing everything except that which yields a large profit, it is very doubtful if there would be enough farmers left in each county for the establishment of a farmers' institute. We think that hogs can be raised for market, at the market price, and a profit realized that will compare favorably with profits realized from other branches of farming.

In no domestic animal has there been a greater development than has been made in the hog. The hog of our forefathers had to be bred along different lines from that of today. Our forefathers' hog had to be so constructed that he could carry his own load of pork to the markets of the East. He had, or he was not a success, speed and great endurance. His snout had to be long and slender for two reasons; first, so that he could stir the forest leaves for his daily bread; second, so that the air would offer but little resistance to his flight when he was pursued by wolves.

But time has improved the hog in many ways. Today he is bred for pork and not for speed. The ideal hog of today has symmetry of form, early maturity, fattening qualities and a quiet disposition. All these were lacking in the hog that was admired in the days of long ago.

There are about twelve breeds of hogs that call for recognition in this country. The breeders of each type claim to have the best, and probably each breed has points of superiority over every other breed. The breed for us to keep is the one that we think has the most points of the greatest importance, and is a kind that we like.

Some think that there is little to learn about raising hogs, and that plenty of feed and strength to deliver it to the hogs are the only elements of success in pork production. On the contrary, a man with a bright intellect may raise hogs all his life and make the business a study all the while and when old age overtakes him he will not know all about this one subject.

Making a choice of the parent stock is the first thing to be considered in the raising of hogs. It is a part of the business that no farmer can afford to pass by without careful consideration. The farmer who thinks that the difference in quality of hogs is measured by the amount of corn fed, and aside from this that all hogs are equal, is a failure as a hog raiser.

In choosing the mother we have found that she must come from prolific stock and must be of the growthful kind; she must have good length, but must not be too long, or she will be hard to keep; she should be as thick, or nearly so, through the hams as through the shoulders; she should have a short head and neck and full jowl; she must not be flat sided, but have nearly as much rib curvature as her male relatives, unless you want her for a sign-board. She must have good bone. Large bones are not always good bones. One of the coarsest boned hogs we ever saw had feet that turned up like the toes of an old Merino sheep under a free-wool administration. What we mean by good bones is, bones that are strong, bones that are in proportion to the rest of the hog, bones with tendon attachments that will keep the hog up on its toes no matter what the condition of the hog may be. She should have symmetry of bone, and she must have a quiet disposition, and this disposition must be encouraged.

The farmer who drives his hogs from place to place about his farm often gets into trouble, and his chances for the heavenly kingdom are sometimes greatly reduced. Any hog can be led almost any where, if moved when hungry. When a hog will drive he will, and when he wont he wont. Every hog raiser should have a hog crate or two and use them when necessary. There have been enough hogs killed by trying to drive them when they could not, or would not go, to buy a good crate for every good farmer.

Too many farmers are not careful enough about the hogs they keep for their breeding stock. Many are keeping hogs of the most inferior kind, when the first litter of pigs from a good sow would more than pay the difference between her cost and that of a scrub. "Like produces like." Then how can you make nothing produce something? You are careful, when you buy a horse, to get one suited to your needs, and when you raise a colt you would not want one from brier-patch stock. When you buy a cow you want one that will give good milk and plenty of it, is nice looking, raises good calves, is easily kept fat, wont harm the children, and other requirements too numerous to mention. Then why are you not as careful to make your hogs come up to a certain standard?

We all know that the best hogs bring the best price in market and will grow faster, fatten easier and look better than inferior stock. We think that thoroughbred hogs can be raised for market at a better profit than grades, but do not get the words thoroughbred and full-blooded confounded. An animal may be full-blooded and its sire and dam closely related, while it may be just the opposite of thoroughbred.

No farmer can afford to inbreed his hogs unless he wants a little, short, piggish hog with a constitution that can not stand anything.

Now we will suppose that the hog raiser has stock to suit him, even if he is hard to please. In order for him to be successful he must in some measure be prepared with conveniences for keeping hogs. The farmer with only a hog-pen and no lot in connection, or with a pen and a mudhole attached, which becomes a dustpile in dry weather, can not raise the best hogs with the least feed, work and risk. One does not need to go to any great expense in the preliminary arrangements, but the better you are prepared the quicker and easier your work. We have in use a part of the year seventeen different pens and lots. Nearly all the lots have fresh water the year round, the supply coming from three running streams and three pumps. Some farmers may say: "I can carry my hogs what water they need, it only takes a few minutes each day." But how about the days in a year, and the years in a lifetime? These minutes are worth more than a little fence and a few feet of three-cent gas pipe. Besides, the hogs can have drink when they need it.

Hogs should have a sleeping place that will keep out the snow, wind and rain, and have some kind of a dry, solid floor. They should have a nest of dry straw or leaves.

The breeding hogs should be fed enough to keep them smooth but not fat. When we were starting in the business we purchased a pair of hogs that were from prolific stock, but we fed them all they would eat until they were about a year old, to make them larger than any others of their age at two county fairs. But they were failures for breeders because they were overfed. Let your sows have the run of some pasture in the grass season, and if the grass is good and they have no pigs running with them, but little, if any, grain will be needed. When there is no grass give them something else besides corn. Bran and shorts, or ground wheat, or corn and oats ground together, are better for the breeding stock and the young growing stock than corn, for they contain more bone and muscle forming elements. But do not confine them to any one kind of feed; change the feed occasionally and they will thrive better. Change the rations as much at least as the old bachelor did who had bread for breakfast, butter and bread for dinner, and bread and water for supper.

Give the brood sow some meat scraps and greasy slops before the pigs are farrowed and she will not be so liable to eat her pigs. The first litter that a sow eats she eats because she needs meat or some element that meat contains. If she forms the pig-eating habit it will be likely to stay with her. Give all the hogs plenty of fine coal and lightly salt their slop, and they will not be troubled with worms. Coal will partly take the place of corn in keeping them warm, for it is the carbon in their feed combining with the oxygen that they inhale that keeps their temperature up to a certain degree.

You will know of course when to expect the pigs to arrive. The sow should have plenty of dry bedding and have it long enough before for it to become packed, but not long enough for it to become damp.

Many litters of pigs and many sows are lost, or permanently injured, by the mother becoming constipated. Give plenty of salts.

When you see a litter of young pigs biting each other and squealing, part of them trying to sleep and the others fighting them, give their mother no corn for a few days, and put in her warm, bran slop some powdered resin or tea made of white-oak bark and give each pig a teaspoon of lime-water or some other good remedy for their dysentery, or their lives may be failures. We have read articles on pig management where the writers said that we should take a pair of nippers and pinch off the little tusks so that the pigs would not hurt each other while they were young. If these writers knew anything about a pig they would know that the pigs are in misery, or they would be peaceable. Pulling teeth is the last remedy for dysentery that we should try.

When the pigs are three days old make them exercise whether they want to or not. The lack of exercise has ruined many pigs. If they get plenty of nourishment and the weather is cool, they are inclined to lie and sleep too much, and often before they are two weeks old they begin to wheeze, then they cough, next their sides begin to jerk and their backs bow up and they have the thumps. The remedy is to kill all that are affected that way.

When the pigs begin to eat with their mother they sometimes overestimate the amount they can digest, and sick pigs are the result. Give less feed for a few days and again give resin or lime-water. After this time there will be but little danger or loss if they are properly fed and have a dry, clean nest. Many of the pig ailments come from damp nests. The straw may look dry on top and be damp underneath. Never give a hog a new nest of straw on top of an old one, but throw it out to the bottom and it will pay for the time spent.

We know of pens that are not cleaned out for months at a time. The hogs which occupy these quarters have to depend on the corn they eat to keep them warm while they sleep and while they are up. When the weather is cold it will take all the supper they eat to keep them from freezing until morning and part of their breakfast to keep them warm until supper again. Expensive business. No wonder that the farmers who do this kind of work think: "We cannot raise hogs for market at the price they are now bringing."

As to the ringing of hogs, is it wrong or right? Is it cruelty to animals, or otherwise? Some think one way, and some the other, and some do not think at all, and while they are doing this the hogs try to root the foundation from under their premises.

We think the time to put in the rings is when the pig is old enough to root, and keep them ringed until they die. We have too much respect for our hogs to allow them to go without rings. It makes a difference to us what kind of rings we use. We have no use for a ring that does not close outside the nose. We have had to cut rings in two and take them out to keep the hogs from dying of blood poison from the copper on them. We do not consider it safe to put the ring in the middle of the nose. You may ring there many times and do no harm, but there is danger. We have good reason to believe that there is so sensitive a nerve in the middle of every hog's nose that if the ring severs it the hog will die as if it were shot through the brain.

Now we have the pigs well started in life, they are supposed to have comfortable quarters and are properly ringed. We will now pass from the pig to the shoat. In feeding hogs for market we strive to produce as much pork as possible from a certain amount of feed. Many farmers feed their young hogs only enough to keep them alive, or to make them grow just a little until within a few weeks of the time they are to be marketed, and then they feed them more than they can eat. These hogs are only shells. Feed the shoats to keep them growing steadily until they are developed, solid hogs. Hogs will improve faster with less risk to feed them a little less than they would like to have. It is not the great amount that they eat that makes the rapid gain, but the amount that they assimilate.

There can be no rule governing the marketable age of hogs that we can all follow, for different breeds need to be fattened out at different ages, and sometimes our supply of feed has to be considered. We have mentioned the feeds for growing stock. Now, as to the kind to fatten the hog for market, we think there is nothing better and nothing cheaper than ear corn. Do not give too much dish water and weak slop along with the corn. A hungry hog will drink a gallon or two of dirty water to get a spoonful of grease. Let them have their feed and drink separate.

Many farmers have a certain place to throw the corn over the fence to their hogs, and the corn goes over there if the mud is knee deep or if it is dusty, and the hogs have to fish for their feed. Hogs may live fed this way, but they do not require this kind of treatment.

Many of us raise a certain kind of hogs, in a certain kind of place and on a certain kind of feed, and never consider whether we are doing right or not. Many never stop to think. If you can think without stopping, all the better; but think any way. Think out the best methods and practice them, and your business will prove successful.

SPRING CHICKENS FROM INCUBATORS.

By Mrs. Charles E. Rodgers, Pleasant Ridge, O.

[Read at the Farmers' Institute held at Blueash, Hamilton County, February 1 and 2, 1899.]

I am asked to say a few words on this subject, suggested I suppose because we try to raise a few spring broilers with incubators and brooders and having been fairly successful are regarded as poultry fanciers. I will say right here that we are not fond of the business, but are following it because it suggested a possibility of making a few extra dollars in the spring to bridge over the time of what our grandparents called "between hay and grass."

The fact that we have been fairly successful gives us encouragement to keep at it, even after hearing and knowing of numerous entire failures.

We — being amateurs — have always been desirous of seeing a poultry plant in operation and have traveled quite a distance to see them as advertised, but only to be disappointed in every instance. We know however that our travels have not been extensive enough, as there are many poultry plants in successful operation, as shown by the markets.

Our venture in poultry raising in the beginning was not to make money, but to have the products for home consumption.

We reached a time when we had neither chickens nor eggs and in desperation began to read poultry journals and send for incubator catalogues. These, of course, told us of the value of egg food as compared with lean meat, the relative cost of production of eggs and pork, asked if the magnitude of the poultry industry of this country had ever occurred to us and gave us some figures compiled by secretaries of agriculture, which of course many of you have read, but of which I will give a few for the benefit of those who may not have done so.

It is estimated that there are in this country three hundred and fifty million hens. At thirty cents each, these would be worth one hundred and five million dollars, but their earnings is what we will mention. They will this year lay eggs enough to encircle the earth more than twenty times if laid in a continuous chain. These eggs will weigh eight hundred and fifty three thousand one hundred and twenty-five tons. The sales from these hens, of eggs and poultry meat, will amount to two hundred and ninety million dollars. We brag of our mineral products of iron, gold and silver amounting to two hundred and eight million one hundred and sixty-eight thousand seven hundred and sixty-eight dollars, yet the hen could pay for it in one year and have eighty-one million dollars to spare. The hen could buy the entire wheat crop and have fifty million dollars to spare out of her year's earnings. She could buy the entire wool clip, the sheep as well, and have enough left to purchase all the swine in the land. Or, she could buy the entire potato crop, and give every man, woman and child in the United States three dollars as a Christmas gift.

Hon. James Wilson, Secretary of the United States Department of Agriculture, recently made the following economic statement: "If all the salaries received by the politicians were compared with the value of the eggs laid every year, it would be found that there was more money in hens than in politics."

We find as a rule that poultry raising is merely an incident to farming or other business; time and attention required are not items of cost, as the business involves but little manual labor and that of a light character and is usually the work of wives, daughters, or some person generally considered by the head of the house, as an unproductive member of the household, and on the ordinary farm the food consists largely of what would otherwise be wasted.

After due consideration, and hearing many discouraging remarks from inexperienced people, we visited for advice a man that we knew had used incubators and brooders. As he had gone out of the business of chicken raising, he loaned us an incubator of six hundred egg capacity. We filled it with eggs in February at twenty-five cents per dozen, and the result was one chicken that did not live. But, knowing that the owner of the incubator had been successful when operating it and that he had hatched and marketed hundreds of chickens, we tried again with better success, and our present plant is the gradual outgrowth of this small beginning. It would make a volume of considerable size to give the details of our experience as we progressed.

We hear people say, "If it pays on a small scale it ought to pay proportionately well on a large scale," but right here we will be perfectly candid with you and confess our utter inability to cite you to a single large poultry plant, whose balance sheet would show a profit proportionate to the investment.

We understand that discussions arise as to whether it is more profitable to raise chickens by artificial incubation than with hens, also whether they can be hatched and reared by incubators and brooders at all successfully. We will say that the former can be easily demonstrated and the latter we state as a fact. In the first place nothing taxes the vital powers of your hens so much as sitting and you certainly have been annoyed by their invariably declining to sit when you most desired they should, so that you might derive the benefit of the best market for your chickens, and their persistence in sitting when it is least convenient or desirable to you that they should do so. If some desire to sit at an opportune time, the desire is little likely to attack a sufficient number of them at such time as to render their combined hatch an object of any commercial importance. That alone is fatal to the enterprise of early chicken raising. Then you cannot set many hens in one building, even should you have the requisite space and a large number of hens ready and willing to sit at the proper time. Unless very exceptional arrangements existed, the quarrels and fights would rapidly deplete the stock of eggs and the chickens would lead a very precarious existence, because there is no female more jealous of another than a broody hen; it is possible to keep the peace among them only by keeping them apart. This is not possible on a large scale, and so that also bars the raising of chickens in any great number by sitting hens.

Again hens of a good laying stock will not care for their chickens longer than from four to six weeks. At this age the chicks are not fledged, and as you are hatching early in the season to get the big prices paid for broilers, the weather is cold and your chicks get chilled and die of one of the many forms of indigestion, or freeze to death, so this again renders it impossible to raise market chickens by the hens. We could give many other reasons why we think artificial incubation superior.

The question is often asked, will the incubator hatch as many chickens from two hundred eggs as the hens will and will the brooder raise as large a percentage of these chickens? A hen in early spring cannot cover over twelve eggs successfully: of these she seldom hatches over eight or ten, she often kills one or two chickens and seldom raises six, taking the average. We think all will agree that this is a fair estimate.

This calculation must be based only on fertile eggs. Any good incubator can be relied upon to hatch from sixty to eighty per cent. of the fertile eggs and a good brooder to raise ninety-five per cent. of all healthy chickens.

Broiler raising is emphatically a business, and when attempted by a novice almost always proves a failure until he has paid for the experience, which is the essential element of success in any business. Learn something of the hatching and rearing of chickens first. Get your experience cheaply, then you are equipped for embarking in the business on as extensive a scale as your capital and energy will permit, and with the attention any other business of equal value would require, you cannot make a failure of it. Without patience and perseverance, however, you may with infinite ease score a disaster. You are sure to do so if you are not in earnest about it, and if you leave for some one else to do what you should do yourself. We must understand fully before we begin that there is no phase of the business that can be neglected. It is light work but full of details. The difficulty in the way and the one thing that has kept many from going into the poultry business is prejudice. It is difficult to divest a man of prejudice and no person can hope to succeed in a business for which he is unprepared and of which he is ashamed. Give every energy to poultry raising in the winter and early spring and fall back on some other business the remainder of the year. We began with the one incubator and obtained our experience by eternal vigilance and could now operate a number of incubators if we could get the eggs. We were advised not to depend on any one to furnish eggs, or we would be sure of disappointment, and not be able to get them when needed. This we find to be the case, but being farmers we are so busy with other duties that the laying hens are neglected and with the exception of one season, we have depended on others to furnish us eggs. When we did interest ourselves in the laying hens and gave them careful attention, we were successful in getting a satisfactory number of eggs from twelve or fifteen hens, but when we attempted a hundred on the same plan, twelve or fifteen in a house, with run attached, the result was scarcely an egg. We kept the Barred Plymouth Rock as the best general purpose fowl, tried to feed systematically, tried having early pullets and one-year-old hens, but could not get eggs, nor do we know now how to care for hens to make them winter layers, and are now depending on others for eggs at twenty-eight and thirty cents per dozen, getting a few eggs each week from a number of persons, but not enough to run all of our incubators.

We learned that if we would have early broilers we must make the conditions as near like nature as possible, so built a brooder house fifty feet long by twelve feet wide, heating it by a hot water system, making ten pens, five feet by nine feet, leaving three feet for an alley running the entire length of the building. Two and one-half feet of each pen next to the alley are hovers, containing the hot water pipes. The pipes are ten inches above the chickens. Each pen accommodates fifty chickens. At first we put one hundred chickens in each pen, but found that of the one hundred all but about fifty would die, so learned that it is practicable to have only fifty chickens together in pens the size of ours.

We also find that "cleanliness is next to godliness," and in poultry culture is the first consideration. Incubator chickens start with no lice and if kept clean and separated from the older stock, which may be so infected, will have none. The next in importance is temperature. If a chick once becomes too hot it never recovers from the shock and many of the bowel diseases arising from overheating are falsely attributed to improper feeding. Do not let the temperature of the brooder get too low at night; when the chickens get chilled they will crowd together and the weaker ones will get tramped to death. About ninety degrees is the proper temperature for a brooder. It should not be allowed to get above one hundred degrees nor below seventy degrees. The brooder should have all top heat, as bottom heat will cause leg weakness. A lack of bone making food will also cause leg weakness. We find green bone, ground fine in a bone mill and fed regularly, the best bone making food. Plenty of grit is necessary all the time. The chickens must be kept dry and have a variety of food. We could give various menus for feeding, some being more beneficial but too expensive to be profitable. We feed altogether in long, narrow troughs, mostly steamed food, moist but never sloppy. We use the Peerless steam cooker.

The morning feed at present is mashed potatoes mixed with bran and cut clover hay, which is given to the chickens just at daylight. At the same time they are given lukewarm water. About ten o'clock they have a feed of steamed cracked corn, at one o'clock, chopped turnips mixed with ground bone, and in the evening always dry cracked wheat or screenings.

In regard to hatching, we find following the rules accompaning the incubator, to be all that is necessary for success.

Our experience is that the best food for the first two or three days is wheat bread thoroughly dried, then rolled and dampened with warm sweet milk.

I have confined my remarks entirely to chickens, as we have had more experience with them than any other fowl. We now have over one thousand chickens and are running three incubators and two brooder houses. We attempted duck raising one spring with fair success. Had them weighing three pounds when twelve weeks old and sold them for eighteen cents per pound. The following spring we raised three hundred and the price dropped the same season to eight cents per pound; at those prices we could see no profit and abandoned the duck business.

The most discouraging feature of the broiler business is "Cold storage." Before the invention of ice machines broilers would sell for six and eight dollars per dozen. There are now in "cold storage" thousands of broilers ready for the market whenever there is a demand.

Finally I will say to poultry fanciers, that to thoroughly read and then follow the advice given in bulletin No. 41 on "Fowls, Care and Feeding," issued by the United States Department of Agriculture, will insure success.

FEEDING POULTRY FOR PROFIT.

By Mrs. L. B. Adair, Albany, O.

[Read at the Farmers' Institute held at Albany, Athens County, December 30 and 31, 1898.]

My subject, as announced on the program, is "Feeding Poultry for Profit," but as this covers too large a field for one paper, I shall confine myself to one branch of the subject, "Feeding for Eggs." The subject as announced embraces all there is in the poultry business, unless perhaps some raise fowls for fun. That is not my method, neither are my hens like those of a woman of which I once heard. A neighbor remarked to her:

"What beautiful hens you have."

"Yes," she replied, "they are all imported fowls."

"Indeed! I suppose they lay every day?"

"They *could* do so if they saw proper, but *our circumstances* are such that *my* hens are not required to lay eggs every day."

I feed my hens for all there is in it and while they do not lay every day I think I am amply repaid for all care, feed and attention given them. In the first place I shall give a brief description of our poultry house, which, I think for common farm use where poultry is not a specialty, answers the purpose very well. It is sixteen by twenty feet, built on a side hill, southern exposure. The north side, built in the bank, is protected by earth to the eaves; the front, facing the south, is lighted by two large windows protected by wire netting and provided with sliding sashes that can be opened or closed at discretion. The perches are all on a level, about two feet above a raised platform, thus giving the fowls the benefit of all the ground space for exercise. This is kept well covered with litter such as chaff, fine straw or leaves. In winter when it is necessary to keep the fowls confined all grain fed to them is scattered among this litter, thus giving them ample opportunity for the exercise so necessary to the laying hen.

Their morning meal consists of the paring of potatoes and other vegetables of the previous day boiled until soft and thickened with a chop feed consisting of equal parts of corn, oats and wheat bran. The time to give this feed is immediately after they leave the roosts, and I would like to impress upon the minds of would-be egg producers that a great deal depends also on the manner in which it is fed. For instance if you take a pail of this feed to your hens some morning when the temperature is below zero and dump it into the feed trough cold, by the time you are comfortably settled before the fire it is a frozen mass at which the hens may peck in vain. If they do succeed in chipping off enough to satisfy hunger, it takes all the animal heat contained in the body to thaw the frozen food, so there is none left for egg production.

At nine or ten o'clock my fowls are given a small ration of wheat or oats. At noon, when confined, their meal consists of timothy chaff, or clover leaves and heads, from the barn floor, steamed or scalded and mixed with a small portion of corn meal or chop feed. Before going to roost they are given all the whole corn they will eat. This in cold weather should be made warm before feeding. The scraps from the dining table make a valuable addition to the daily ration if properly fed; separate the bones from other scraps and pound them fine so that the meat and the bone also become available as food. It is to carelessness in small details that the failure of many to secure eggs in winter is due.

A friend of mine who is an enthusiast in the poultry business but not exactly successful in securing winter eggs, recently remarked to me: "I would give almost anything if some one would tell me how to make my hens lay. I have done everything you told me and yet I get no eggs." I was at the time preparing some bones from the dining table to be pounded for my hens. After I had explained my method of procedure, she exclaimed, "Oh, I don't do that; it is too much trouble. I just throw them out," as if the hens could devour them like the worthless canine that consumes enough each day to keep a dozen hens in good laying condition.

Fresh drinking water at all times is absolutely indispensable to the laying hen, and in cold weather it should be slightly warmed. I keep a large, shallow box in the poultry house filled with road dust, in which, even on extremely cold days, Biddy relishes a bath. A liberal supply of crushed oyster shell and other grit is indispensable. The fowls should have free range when the weather will permit.

Experience has taught me that as much depends upon how you feed as what you feed. Regularity is the main point. Never underfeed nor overfeed. You cannot throw out enough in the morning to last all day and then go visiting and allow your fowls to shift for themselves and expect any great degree of success. The hens should have meat scraps once or twice a week. After butchering I save the cracklings of lard and mix with morning meal occasionally. The meat rinds are placed in the stove until brown and tender then crushed and mixed with their feed in small quantities.

Methinks I hear some economical housewife exclaim: "Why, I use them to make soap!" Very well, they can make soap who wish. I prefer to feed the soap grease to the hens and buy soap with eggs. Occasionally a rabbit or some other animal trapped by the boy is hung up in the poultry house, and soon there is nothing left but the skeleton.

Every poultry raiser has his or her choice as to the breed to be kept. My best showing was from Plymouth Rocks. From a flock of fifty hens during the months of December and January, two of the poorest months in the year, I marketed eighty-eight dozens of eggs. Since that time I have succeeded nearly as well with Wyandottes.

In conclusion I will say eggs are always in demand, and are always cash. They are ready for market as soon as laid; nothing the farm produces sells better. They require no cultivation, pruning, churning or harvesting. They are at once in a saleable condition; with plenty of eggs on the farm there is an abundance of good things in the kitchen and money in the family purse; when everything is dull in winter the egg basket has wonderfully helped out many a poor farmer. The crop may be poor, the family cow dry with a long wait for the next growing season, but the hen comes up smiling and is ready to contribute the wherewithal to get a pound of tea or a sack of flour. If treated well she responds as readily when the snow is on the ground as when the fields are green; she is a friend to the rich and poor alike.

It is said of General Grant that he had so little knowledge of music that he only knew two tunes. "One was Yankee Doodle and the other wasn't." There are only two ways of caring for poultry, one is the right way and the other is not.

CLIPPING HORSES.

By **Hosea J. May**, New Springfield, O.

[Read at the Farmers' Institute held at North Lima, Mahoning County, December 7 and 8, 1898.]

Is it inhuman and unnatural to clip a horse? Some enthusiastic lovers of the horse will answer at once "yes" while others will as unhesitatingly answer "no." It is not, however, a question to be decided on any vague or indefinite feelings in the matter.

With each recurring season comes up this question of "clipping horses" and those who favor and those who oppose the practice seem equally sure that they are correct. There may be many arguments and reasons given for clipping, and again some against, but which weighs heavier if placed in the balance depends upon circumstances, for circumstances alter cases. We notice several facts, however, which favor the theory or practice of clipping; first, that it is becoming more used among the increasing number of driving horses in the city, and especially those with some speed, which are clipped each succeeding year.

To the city driving horse, which in the winter season is speeded over the avenues at a rapid rate and during extremely cold weather, clipping has proved a benefit. The winter coat becomes wet with sweat, and the long hair covered with frost and icicles. If left exposed in this condition a case of pneumonia is likely to result, and, if returned to the stable, it is next to impossible to rub the horse dry, and unless he is dry he must suffer the greatest discomfort and be made easily liable to a chill and the result an attack of some disease. Such horses certainly can not enjoy much refreshing rest before being called on to resume their daily toil, and hence for them clipping is to be most strongly urged as humane and judicious treatment.

A horse with a heavy coat of hair, wet, put into the stable at night has been known to come out the next morning with the ends of the hair dry, while next to the skin it remains wet and cold. So it is found that the practice of clipping saves the horse from becoming so quickly chilled, as he does not sweat so freely and when returned to the stable can be quickly rubbed dry and be made comfortable. In the case of long-coated horses, which are frequently of sluggish disposition, clipping is found to act as a stimulant, and they become free drivers, and have better appetites as the result of the practice.

In the case of horses on the farm, however, conditions are entirely different. They are not driven so as to cover them with sweat in cold weather, and so long as the hair is dry the long coat is a protection from the weather. The winter coat of the horse is a protection given it by nature to enable it to withstand severe cold when exposed.

Of course draft horses are seldom clipped. They are driven slowly and are compelled frequently to stand exposed to the cold for some time in the process of loading and unloading. They require their natural coats to protect them, and they are seldom removed by clipping.

The argument that it is cruel to clip a horse that is in the hands of a careless owner, for the reason that deprived of his natural coat, he will suffer from cold, is far fetched and quite wrong. It is the careless man that, before all others, should have his horse clipped, for he is much more liable to spend fifteen or twenty minutes rubbing the clipped horse than between two and three hours drying out the long-haired animal. It is only reasonable to suppose that a horse can stand the cold alone better than the cold and wet. The clipped horse, however, should never be left standing exposed for any length of time, and should always be carefully blanketed if standing even for a short time. He should be clipped in the fall, so that his coat will begin to grow a little before the extreme cold of January and February, as he will then be hardened, and not feel the change as if clipped in extremely cold weather.

We are now about in the middle of the clipping season and some horses look better with their natural coats, but I think that common hacks and ordinary roadsters are improved in appearance by clipping. Their heavy coats are also an impediment to hard work, and a source of discomfort to them when they return to the warm stable at night, for they cannot be easily dried and are apt to catch a chill and not obtain as refreshing rest as they require before resuming their labors in the morning. In the treatment of such animals clipping is to be commended. A horse should never be blanketed in a stable while he is warm unless you give him a dry blanket shortly after.

The superintendent of a certain street-car line, in the day when horses were used, called at the office of the Society for the Prevention of Cruelty to Animals, to ascertain whether any action would be taken against the company if they clipped the horses in the winter. He was assured that not only would no action be taken, but it would be advisable to do it. The mortality in the stables that winter was twenty-five per cent less than in previous winters.

Too many friends of the horse are prone to be guided by the very misleading rule that any departure from nature's endowments is cruel and should be discountenanced. They forget that we are deliberately interfering with nature at all times. It is unnatural to house or shelter a horse, to curry and to clean him, to work and even to feed him, but it is natural for horses to be together in a herd and run wild. We should remember that the horse has become a domestic animal and the conditions under which he lives are artificial, therefore artificial treatment must be adopted to render him in the highest degree useful as a servant to man.

SPARKS FROM THE HORSESHOE.

By M. W. ALSTADT, Laurelville, O.

[Read at the Independent Farmers' Institute held at Laurelville, Hocking County, March 12 and 13, 1897.]

In my attempt to present to you a paper on this subject, I shall not attempt to present it in a scientific manner (for I could not if I would), nor will it be mere theory, but facts that I have learned, the outgrowth of observation during twenty-five years of experience in the blacksmith shop. In that time I have shod horses, mules and oxen, the latter in a very limited number; however, enough to have my curiosity gratified, and to be away from home when the oxen came around again.

Horseshoeing is divided into two classes: First, Artistic; Second, Practical or General. Artistic shoeing is that class that more particularly belongs to the shoeing of the race horse, the track horse, and is done with more exactness as to the weight and form of the shoes, while neatness and polish are also considered. The main point in this class of shoeing is to properly level and balance the horse in the effort to develop his speed.

In the second class, we have the shoeing of the road horse, the general purpose, the draft and the farm horse. Protection to the foot, ease and comfort to the horse, is the prime object sought, with a view largely to the durability of the job. In this feature (in the eyes of many), lies the merit of the job. In the latter class, I have had the most experience, and it is the one of which I will more particularly speak.

For convenience to myself and that you may better understand my remarks, I have divided my subject into four divisions: First. The care of the horse's feet. Second. The necessity of shoeing. Third. The abuse of shoeing. Fourth. Shoes — their kind, their object.

THE CARE OF THE HORSE'S FEET.

The care of the horse's feet is often sadly neglected, — especially the colt's feet. They should be watched and cared for just as regularly as you would care for the shoeing of your driver. The colt's feet are just as apt to grow irregular and crooked as they are to grow straight and perfect, and many times if allowed to grow in an uncared for way cause defective limbs and interfering, and spoil the colt's gait. I believe if more attention was given to the colt's feet, we would have less trouble with our horse's feet. "As the twig is bent, the tree is inclined." By properly training the feet with knife and rasp, we may correct many defects that they are heir to. I do not mean by this, that we should interfere with the general form of the foot or shape it to our own taste or idea. Our better judgment should dictate what should be done. Generally it is not so much the lack of knowing how to care for the feet, as it is negligence. Keep them well trimmed, with a proper regard for the toe, which should be kept reasonably long. See that the foot is level, and the irregular projecting parts rasped off. The hind feet suffer most. In ninety-nine cases out of one hundred, the outside of the feet are worn off the most, and the inside grown long and crooked, and should by all means be trimmed and kept close. In quite a number of cases, I have been obliged to put a half shoe on the outside of the foot to allow it to grow straight. Caring for the colt's feet works a two-fold result: while you are training them to grow straight, you are also teaching the colt to stand to be shod. Look well to the interest of the colt's feet and you will see results that will be satisfactory, remembering that "no foot, no horse." I am convinced that the proper care of the colt s feet will save much trouble and worry on the part of the horse owner, and confer a great favor on the shoer and he will thank you I am sure.

SHOEING A NECESSITY.

There was a time in the world's history when it was not necessary to shoe the horse, but that day has long since passed; and in the progress of events it became necessary that the horse's foot should have something more than nature's gift that he might be able to perform the work assigned by man with comfort and ease. The ingenuity of man has always been equal to the emergency, and when the proper time came, shoes were invented, and by the skillful hand of the mechanic were applied to the horse's feet, and the farmer, the teamster and the coachman went right on in their regular routine of work uninterrupted. The facts are, that our numerous pikes, and in fact nearly all our roads are graveled; we drive more, drive harder, go and come more quickly; hence, it is reasonable in this day and age to say that shoeing is a necessity. Some writer has said, "It was a sad necessity when the horse had to be shod."

I cannot see why it should be such a sad affair, when it is properly done. Away back in ancient times, men went in their bare feet, or perhaps wore sandals that just covered the soles of their feet; but today, we wear shoes, and I hear no one complaining that it is a sad affair, except, perhaps, some one that has been injudicious and crowded a No. 9 foot into a No. 6 shoe, and shortly afterwards was making inquiry for a good corn cure. I consider the shoeing of the horse as simply keeping abreast with the great moving world, and I am glad to say that I believe the shoeing fraternity is keeping step with the advancement of other trades and professions and is up to date. I believe in advancement, in progress, and if I understand the full and true meaning of this organization that has assembled here for two days and two nights, it is for the purpose of exchanging ideas, widening our views, and enlarging our capabilities for efficient work.

THE ABUSE OF SHOEING.

While we recognize the fact that shoeing is a necessity, and that it is all right when properly done, we must not overlook the fact that shoeing is abused many times and in many ways. Sometimes it is the fault of the smith, and sometimes it is the fault of the owner. In the first place, the horse has no choice as to what kind of a shoe he shall wear, or in what manner it shall be applied to the foot, but is left simply at the mercy of the smith and the owner. If the smith has been careful in selecting an easy shoe, one that fits, and it is properly applied, well done; but, if the shoe is not easy and is carelessly put on, the horse must stand it. How careful we are when we make a purchase of a pair of shoes for ourselves. *They must fit* — not too long or too short, too wide or too narrow. The fit is what we want and will have; and when I carefully think this matter over, I am impressed with this, that the smith should be very careful in the selection of a shoe suitable to the need and condition of the case, and it should be applied in a careful manner so that the horse may be comfortable and easy. I believe the day is not far distant when the shoer will be compelled to pass an examination, (as the doctors, lawyers and school teachers) before they shall be allowed to practice. I say, let it come, and I will take the test with the fraternity of shoers, and if I fail to pass, (and it is very likely I would), I will gladly step down and out and give room for those who are more worthy.

I will notice some of the more common mistakes in shoeing and speak of them as I see them. The horse is often shod with too long a shoe. This mistake is made more frequently by the owner of the horse than the smith. A great many people think a long shoe is a great benefit to the horse; but this is a sad mistake. The foot grows slanting forward. The shoe should extend back past the heel, just to cleverly clear the outer shell or rim of the heel, and any length in excess of this, is unnecessary, and should not be indulged in. The long shoe changes the natural position of the foot and limb; it is clumsy and cumbersome to the horse, and acts as a leverage against the natural use. The hind feet are different, and can be shod with a longer shoe than the front feet without any bad result. Another mistake that is often made, is shoeing too wide at the heel. Many people are very particular to tell you to shoe their horse wide at the heels to prevent contraction of the foot. In my experience, I have noticed that the shoe wide at the heel has more of a tendency to contract than the narrow. The reason I give is this: the weight of the horse presses the hoof between the shoe and is contracting the foot at every step. In my judgment, the narrowshod heel is less objectionable. The shoe should rest on the rim or shell of the foot all the way round, flush with the outside of foot, and if the foot becomes contracted, it is from some other cause, not the shoe. The practice of shoeing with high toes and calks is a serious mistake. In examining the foot, I find that nature has provided the foot with a frog — the natural spreader and expander of the foot. The frog performs its office work only when it is allowed to come in contact with the ground, or by pressure placed upon it by some artificial appliance. Accepting this as a fact, we see the inconsistency and danger of the high toes and calks, as they rob the frog of its functions and cause the foot to contract. The frog serves another purpose, also; it is of a spongy nature, and when the foot strikes the ground it acts as a spring, and prevents the concussion or shock to the foot and limb. Aside from the points I have mentioned, the horse would be clumsy and ill at ease. My advice is by all means avoid the use of high toes and calks. Shoe your horse close to the ground — a smooth, thin shoe is best — so that the frog may perform its office work and the foot be kept in a healthy condition. Another practice that is indulged in, but not so much as it was in former years, is the unpardonable act of setting the shoe back from the toe, say from half to three-fourths of an inch, and after the shoe is driven on, to cut off the projecting points with a chisel, shaping the foot to the smith's own taste and fancy, supposing the short, stubby, square toe to be a beauty; this method is a dangerous one. The foot should be pared and trimmed from the bottom and the shoe made to fit the foot not the foot to fit the shoe. Very many mistake in using too heavy a shoe. While I realize the fact that durability is largely looked after in this day, the general result of the heavy shoe is not satisfactory. The heavy shoe is tiresome to the horse, and hard on the tendons. Especially, the horse with a thin shell and soft foot should not be shod with too heavy a shoe. Experience has taught me never to put on a heavier shoe than necessary, to shoe according to the needs of the case.

The question is often asked, how long can shoes remain on the horse without damage to the feet? I will say, that there is no fixed rule that I know of by which we can determine this. It depends on the condition of the feet and the use the horse is put to. Too frequent shoeing is hard on the feet. If a shoe is tight on the foot and does not rest inside of the shell at the heel I can see no reason for bad results even if the shoes remain on eight or ten weeks; but when the shoe begins to work on the foot, it becomes necessary at once to attend to it. If neglected, the horse is likely to become graveled, and, besides, does not travel well, and the foot suffers.

SHOES — THEIR KIND AND THEIR OBJECT.

There are many kinds of shoes in use to-day, and of this great number I have selected five different shoes and will attempt to give their use, and also tell their good and bad features. First, I will notice the common shoe. It is just a plain shoe, and its prime object is for protection to the foot. This is the one that is most used today, and it serves its purpose well.

The toeweight is a shoe heavy and wide at the toe, decreasing in width from toe to heel. The object of this shoe is to quicken, elevate and extend the feet, and it is used on the front feet; notwithstanding the fact that this shoe will do what is required of it, I am not much in favor of it, and would not recommend its use, especially on the roads. In the first place, it is too heavy and there is danger of overtaxing the tendons; the extra weight gives the foot more force, and, consequently, it strikes the ground harder and causes more of a shock to the foot and limb, and when the horse is not in use, and should be at rest, he must lift too much weight. The better plan is, in my judgment, if you must resort to weight at all, to use the regular toeweight that fastens on the toe of the foot, and can be put on or taken off at will, and when the horse is not in use will not interfere with his rest. The sideweight shoe has one side heavier and much wider than the other. It is used generally to prevent interfering, as it tends to widen the gait. This shoe I have used to some extent in my trade, and with good success; yet there are cases of interfering that this shoe will not prevent.

The "tip" is a shoe similar to the common shoe, in some respects; but it does not extend the full length of the foot, but from toe to the quarters. This shoe is made in two patterns: the one is uniform in width and thickness its entire length, and is applied to the foot by cutting the thickness of the shoe from the foot and making heel and shoe level; the other style is the same except at the heels, which are drawn to a thin edge, and is placed to the foot as is any common shoe. The object of this shoe is to allow the heel and frog to have a ground pressure and the foot to perform its work. This is a very good idea and should be used much more than it is.

THE BAR SHOE.

This shoe is simply a common shoe, with a bar connecting the heels and formed in the shape of the frog. This is a wonderful shoe, in my judgment, and while it is not a cure-all, yet I know of no other shoe that will do as much. This shoe is used for many different troubles and defects of the foot. Its results are very muct the same as the "tip". First, I notice that it is a foot spreader or expander and, as I have already said, the frog of the foot performs its office work only when allowed to touch the ground, or by pressure put upon it by artificial means. You will now readily understand why I call the bar shoe a spreader or expander. Second, it is a corn cure. It is impossible to cure corns while the foot is shod with the common shoe, which presses on the heel; but by the use of the bar shoe the pressure is taken from the heel and put on the frog, thereby stopping the irritation to the corn, and in this way, if carefully followed, the corn will disappear. Third, it is a cure for quarter crack. I have had quite a number of cases in my experience, and the bar shoe has never failed me yet. This shoe is one that I can recommend to you as having merit in it. Try it, and satisfy yourselves as to the truthfulness of the theory.

INCREASED FERTILITY.

By F. L. ALLEN, Kinsman, O.

[Read at the Farmers' Institute held at Andover, Ashtabula County, December 12 and 13, 1898.]

Since the food supply of man comes directly or indirectly from the soil, the question of maintained or increased fertility is of interest to every individual of whatever occupation, or class of society, but to the farmer who tills the soil it is, or ought to be, a matter of vital importance. The question of whether a farmer is happy or unhappy, cheerful or discouraged, contented or discontented, successful or unsuccessful, depends very largely for its answer upon whether the soil which he cultivates is becoming year by year richer and more productive or poorer and more sterile. Moreover, it is due to future generations, who shall bear his name and till the acres which he tills, that he hand down to them a soil not only undiminished in fertility, but, if possible, of increased productiveness.

Of the seventy or more elements which compose this earth upon which we live only a few enter to any extent into the composition of plants or animals. And only three of these are to any great degree liable to exhaustion. These are nitrogen, phosphoric acid and potash. These three are sometimes called the essential elements, though some of the others are also essential.

Nitrogen came originally from the atmosphere, and is still coming slowly from the same source. Phosphoric acid and potash came originally into available condition from the breaking up and decay of rocks on the earth's surface. There was a time when the surface of the earth was covered by nothing but solid rock and water. Now rocks decay when exposed to the weather. Freshly quarried stone soon loses its sharp edges and bright color and becomes rounded and dull in hue. Rocks absorb water which expands in freezing and breaks off portions of them; rains wash these fragments away and at the same time wear off more of the surface of the rock; this worn rock becomes *soil.*

Glaciers have been a most important agency in making and distributing the soil. Geologists tell us that at one time all the northern, western and southwestern portions of our state were covered with a body of moving snow and ice of immense thickness and weight. As this ice flow advanced it ground up and pulverized everything in its path. And when it receded under different climatic conditions, deposited great quantities of soil, boulders and debris. This soil is known as drift soil and is the richest in mineral matter of any we know, because it is deep and composed of a great variety of elements brought together from distant sources. It contains a practically inexhaustable supply of the so-called necessary elements — nitrogen, phosphoric acid and potash.

Why then are our farms so unproductive if they contain such a wealth of plant food? Because these elements are in an unavailable condition. The productivity of a soil is not a correct index of the total amount of plant food it contains. Nature has wisely locked up her stores of fertility and deals them out to us in small quantities. Were it not so, prodigal man would soon waste the resources of the soil and as punishment for his prodigality would be compelled to starve.

Now the question comes, how can we render available enough of this vast store of fertility to make our lands more productive? Before we attempt to answer the question, however, suppose we look a little more closely at the soil. If you examine it carefully you will see great numbers of mineral particles, which look like small stones. This is just what they are. All soils are composed largely of minute pieces of stone. Even our clay soil, under a microscope, looks like sand. Now the fertility of a soil depends largely upon the size of its particles. This is so because the mineral food of plants is provided by the dissolving of the mineral fragments in the soil. Naturally the finer the particles the more rapidly they will dissolve, because they present more surface for the liquid to act upon. Also the finer the particles the more water the soil will hold.

But our soil contains something more than fragments of stone. It contains large quantities of decayed and decaying plants. This is called humus. It gives to the soil its dark color and is one of the most important of its constituents.

Besides all this the soil is the home of myriads of living creatures, too small to be seen with the naked eye. We know them by the general name *bacteria*. These little fellows are constantly at work causing the decay of vegetable matter in the soil and thus aiding in the production of available plant food.

Now, coming back to our question of how to render our lands more fertile, we answer, in a word, by assisting nature's process. The subject accordingly divides itself into three divisions: drainage, tillage and manures.

Drainage. — Thorough drainage either natural or artificial is the first thing to look to, and is absolutely essential to any marked degree of success. Soils and conditions are so various that I will not attempt to say what thorough drainage implies; only that all *surplus* water must be removed from the soil. Under-drainage is much to be preferred to surface-drainage; by enabling the water to pass *through* the soil it prevents to a large extent the washing of the surface by heavy rainfalls, which not only destroys the growing crops and fills the fields with ditches and gullies, but also works almost irreparable injury by washing away the fertile top soil, and leaving in its place the raw, crude subsoil.

Far more important, however, is the action of under-drainage in deepening and aërating the soil. We, most of us, have had some experience in trying to cultivate wet lands. We know how unsatisfactory it is. The soil cannot perform its functions of preparing food for plants without the agencies of air, heat and moisture. Now an excess of moisture excludes the proper action of the other two, and if the organic matters in the soil are not decomposed and resolved into a liquid or gaseous form so they can be taken up by the roots of plants, the process of nutrition is impaired and the plant becomes weak and sickly. Again, lands that hold water in a wet season become hard and compact when the water has subsided or evaporated, impenetrable alike to the roots of plants and the ameliorating influences of the atmosphere. If we under-drain these lands and allow the water to pass through them, instead of becoming hard and compact they will become light and porous. This admits the air and renders possible those chemical changes which are always in operation wherever air heat and moisture are present. In short those wonderful agencies which we call nature at once become active to unlock and render available the inert plant food contained in the soil, and to make it as deep as it has been drained a fit abode and feeding ground for the roots of plants.

Again, an under-drained soil is warmer than one not so drained, because, if the surplus water were not carried off by the drains, it would have to be evaporated from the surface, and evaporation we all know is a cooling process.

A well drained soil also affords a more uniform supply of moisture. Contradictory as it may seem at first glance, it is our wet, retentive clays that suffer most severely in time of drouth. Under-drainage by loosening the soil enables it to hold more water without becoming saturated. Then, too, I think a great deal of moisture is condensed from the atmosphere in soil where it is possible for the air to circulate through it as in under-drained soil. Thus we see the important part which drainage plays in rendering our fields more fertile.

Tillage. — It has been said that tillage is manure. Indeed the first meaning of the word *manure* is "to work by hand, to cultivate, to till." And tillage *is* manure, not in the sense that it adds anything to the soil, but because it assists in rendering available the plant food already in the soil. It does this mainly in two ways: First, by mellowing and fining the soil, it at once permits of a freer action of the air, sun and atmospheric moisture upon it, and supplies the most favorable conditions for bacterial activity, all of which serve to hasten those chemical processes by which plant food is unlocked. Also the better mechanical condition of the soil obtained by tillage enables the roots of plants to penetrate it more readily and feed upon it more effectively. Tillage, in the second place, is an important factor in promoting plant growth, in that by it, as well as by drainage, we are enabled to conserve moisture. By proper tillage we can bring our well drained fields into a fine compact condition the most favorable for storing moisture. Generally speaking, the more thorough and intelligent the tillage the better the results will be, because the finer the soil and smaller the spaces between its particles, the more abundant will be the rise of water in the soil by capillary attraction. This is a force which we do not all perfectly understand, but we are told that water will rise in an inch tube, standing perpendicularly in it, about one-twentieth of an inch; in a tube one-hundredth of an inch in diameter it will rise five and one-half inches, and in a tube one-thousandth of an inch in diameter it will rise fifty-four inches; so we see the importance of making the soil so fine and compact that the spaces between its particles will be very small. Now if the soil be put in the best possible condition for the upward movement of water, and then left undisturbed, the moisture will rise to the surface and be lost by evaporation. This would also result in a loss of heat, because, as we said before, evaporation is a cooling process. It has been ascertained that well drained, well cultivated soil is from two to four degrees warmer than soil not so treated, a fact which in itself will show largely upon most of our crops. To prevent this evaporation, we cultivate two inches deep, which breaks the capillary tubes and arrests the upward flow of moisture, and holds it where it will be of the most use as a solvent, and where the plant roots may feed upon it as they need.

Manures. — We will now consider briefly the subject of manures. These are of three kinds: First, stable, or barnyard manures; second, green manures, and third, commercial fertilizers.

It is estimated that the stable or barnyard manure of the United States is worth two million dollars annually. Surely it would seem that the farms of the United States ought not to be lacking in fertility with this vast amount of manure to apply to them. But it is also stated that one-half of all this manure value is wasted. What a comment on the thrift and intelligence of the American farmer! One of the most important questions, therefore, that confronts us today as farmers is, how best to save and apply our stable manure. I think we will have gone a long way toward solving the problem, when we thoroughly understand the value of good manure. Now all manure has not the same value. It depends for its value upon the foods consumed by the stock, and upon the care in saving and handling it.

Clover hay is valued by the chemist at over eight dollars per ton, simply for the plant food which it contains. Wheat straw is worth only two dollars and fifty cents per ton, while wheat bran is worth thirteen dollars for manure, and so on through the list of feeds. Now the animal uses or appropriates only about ten per cent. of the plant food which is contained in his ration; the rest is voided in the liquid or solid manure. It is safe to say that the value of the manure from a given food ration is three-fourths — possibly nine-tenths — of the value of the plant food originally contained in the ration. It often happens that the value of the plant food in the manure is equal to the market price of the food before it is given to the animal. These rich foods should never be sold off the farm. We should aim to sell only finished products. If we sell a ton of clover hay for six dollars we are letting eight dollars' worth of nitrogen, phosphoric acid and potash go for the six dollars. If we sell a ton of pork, mutton or beef we get from sixty dollars to one hundred and twenty dollars for it, and yet sell only ten dollars' worth of fertility off the farm. A ton of cheese is worth one hundred and fifty to two hundred dollars and contains about twenty dollars' worth of plant food, while a ton of butter is worth from three hundred to five hundred dollars, but is only worth fifty cents for manure. How important then that we consume our rough feed upon the farm, and sell only the finished products, and get the dollars and save the fertility.

Thus far we have considered manure as valuable simply for the mineral elements — nitrogen, phosphoric acid and potash — which it contains. But it is also of great value for the humus which it adds to the soil. I do not think enough importance has been attached to this constituent of our soils. Soils totally lacking in humus are sterile. Our richest soils are those which contain the most humus. It lightens the soil, makes it friable, enables it to hold more moisture, puts it in the best mechanical condition, makes it warmer, promotes bacterial activity, and aids in every way, in short it is the life of the soil.

Now, perhaps we are ready for the question of how to save and care for our manure. We must keep constantly before us three facts: First, that the liquid manure is of more value than the solid; second, that manure begins to waste as soon as it is voided; third, that the more valuable parts are very soluble and are washed away by the first rains. It is therefore obvious that to save the liquid manure we must have tight stable floors (there is nothing that begins to compare with a cement floor) and that we must either use litter enough to absorb all the water or have a cistern in which to collect and store it. At a recent institute meeting, one of our experiment station men advocated the latter plan, but to me it seems far better to use straw, sawdust or any other absorbent in sufficient quantities to absorb all the liquids. This enables us to handle both liquid and solid at one operation. Moreover, we have the added value of the absorbent. Then the easiest and most economical way to handle it is to draw it directly to the field and spread it upon grass land. So treated the loss is reduced to the minimum. The rains wash the soluble parts down into the soil, where they are seized and held by the grass roots for their own nourishment and in turn for succeeding crops. There is no loss from heating, and it is where it will act as a mulch, producing the best mechanical effect upon the soil.

Green manuring is a cheap and efficient way of increasing fertility. It is perhaps the best way to put new life into a run-down and worn-out soil. Clover is generally admitted to be the best crop for green manuring, because of its ability to draw nitrogen from the air, but it has always been our practice to feed the clover to stock and return the manure to the land, so that my experience in green manuring is limited almost entirely to rye. With our rotation this comes in very nicely after corn (the corn put in the silo), to be plowed down for potatoes the following spring. I value it for two reasons: First, for the humus it adds and the better mechanical condition it gives to the soil, and second, because it keeps something growing on the land and prevents its washing by heavy rains. Nature never enriches land by keeping it bare. I like to have a growing crop on the land all the time. Every particle of plant food is then seized as soon as it becomes available and nothing is lost, but held for a future crop.

Commercial fertilizers may be used to great advantage in bringing up the fertility of a farm. They are powerful agents in the restoration of worn-out lands, provided the growth which they render possible is returned to the land in the shape of green or stable manure. But if the crop grown by their aid is sold off the farm, the soil is robbed of just so much more of its humus and becomes less and less productive.

This paper would not be complete without a paragraph on the rotation of crops. However thoroughly we drain and till, however carefully we husband and apply our manures, the fertility of a farm cannot ordinarily be kept up or increased without resort to an alternation or change of crop. Although the diminution of fertility may be scarcely noticeable for a time and although some soils seem naturally adapted to certain crops, yet the stock of humus and of the specific food required by the crop is constantly diminishing and will ultimately fail, if the same crop is grown upon the ground year after year. Not only do different crops exhaust different properties of the soil, but, because of their different root systems, they draw their nourishment from different portions of the soil. The fibrous rooted crops draw their nourishment largely from the top soil, while the tap, or deep-rooted plants, feed from a lower stratum, and often penetrate the subsoil for a considerable distance for their food. It is a well established fact that a rotation of crops upon a field tends to economize its fertility, and increase the profits of the labor bestowed upon it.

Clover is perhaps the best nitrogen gathering crop which it is practicable for us to grow in this latitude (northern Ohio), and the oftener it can occupy the land the better. Therefore a short rotation with clover is usually to be preferred to a long one. We should work the clover crop to the utmost and care for it as our most valuable crop.

I have tried thus briefly to show that, in order to maintain and increase the fertility of our farms, we must remove all surplus water by drainage, keep the tillage tools bright with use, feed all the products of the farm we can upon the farm, save all the manure, both liquid and solid, and apply it without loss to grass land, improve every chance to grow a catch crop to plow under for green manure, use commercial fertilizers judiciously, practice a rotation of crops, bringing in clover as often as practicable and giving it is rightful place as the foundation of good farming.

HOW TO INCREASE THE FERTILITY OF OUR FARMS.

By H. D. FOLMER, West Jefferson, O.

[Read at the Farmers' Institute held at West Jefferson, Madison County, January 16 and 17, 1899.]

The question yesterday was, "How to maintain the fertility of our lands." The landlord was well satisfied if the tenant paid his rent and left the farm no worse than he found it. But the successful landholder of the future must look farther than just *maintaining* the present degree of fertility, or his tenant will soon be unable to pay him any rent. And so the real question for the farmer of to-day to consider and answer is, "How to *increase* the fertility." When I say increase, I mean an increase at the rate of at least eight per cent per annum. The novice would answer the question thus: "Tile, till, clover and manure the lands and they will be fertile; this is all that is necessary." He does not know that the how, when and wherefore must be known and heeded to make all this a success. For if the tile is not properly laid, the tillage not done at the right time, the clover not properly sown and the manure not rightly applied, the results will not be progress; hence we should understand the philosophy of what we do.

In driving over the country, we notice some neighborhoods where the crops look well, nearly every house is a nice, large one, and other things on the farm indicate prosperity. Again, we notice other neighborhoods where the conditions are reversed. Why is this so? Date of settlement will not answer the question, for we know that some old-settled localities are and always have been far behind what some others are now. The correct answer is: "Fertile farms generally produce good crops and, as a rule, good crops bring about prosperity."

Take Darby Hills and Darby Plains as an example. The hills were settled before the plain land, but, since tile became extensively used, the plains are going ahead of us. Now what is the matter with these hills? Nature has been working most for the farmers of the plains. While this country was a forest for thousands of years the winds have blown the leaves off the hills into the valleys below and the storms have washed away much of the fertility, but on the level land the leaves were allowed to remain and the rains and snow freighted with nitrogen did not run away altogether, but settled into the swamps until evaporation ensued and the fertility was added to the soil below.

But are these wind-swept and storm-washed hills to grow poorer and the plains to far exceed us in prosperity for all time? Not if the farmers of the hills properly harness up nature, train and compel her to work for them. The hill land may be made to raise as good crops as any other, for there is probably as much latent fertility in the red and white as in the black clay.

Right here I desire to explain what I mean by *latent fertility.* A few years ago when soil analysis was expected to become a great help to the farmer, one of our agricultural chemists secured a sample of soil from a worn-out field. This was taken from one side of the field which was then in corn. The corn would not yield one-half bushel to the twelve-hill shock. Just over the fence the land had not been cleared. Were it cleared and planted it might produce, for first crop, corn yielding one and one-half bushels to the shock. The chemist next chose a sample from this woodland just over the fence. The soil where the first sample was taken was supposed to have been, before it was cleared, as fertile as the other. The test of the two samples showed that the cleared land contained nearly as much of the elements of fertility as the woodland sample. The fertility of the worn-out soil was nearly all latent; that is, it was in such a condition that the crop could not use it. Only a small part of the latent fertility can become plant food at a time, and that quantity depends somewhat on the farmer. The quantity of latent fertility in the hills of this vicinity is so great that if it could become available as fast as the crop could use it and other conditions were equally favorable, the corn would have to be harvested with an ax, and the ears would be of the kind the good deacon prayed for, "great long ears, O Lord, as long as your arm." The crop does not depend so much on the amount of latent fertility as on the physical character of the soil and other conditions which I will now introduce.

A loose soil is more fertile than a compact one, because the air penetrates it better. This is one reason why we till. But we must not till when the land is too wet or we will close the pores, then the air does not do what we wish. One reason why we use clover is to loosen up the soil, and one reason why we tile is to get the water out so that the air can get in. Manure also loosens up the soil. The swampy soils after draining are looser than the hilly land, for they have decaying vegetation in them to keep them so, and hence are more fertile. There is but little fertility in straw and cornstalks alone, yet they may loosen up the soil and help make it fertile. A covered soil gains fast in fertility; straw and cornstalks spread on a pasture will make it grow richer. Pastures that are not grazed closely gain in fertility rapidly, and the covering afforded by a dense clover growth has a wonderfully good effect on the soil beneath. When we give frequent shallow cultivation, or in other words keep a dust mulch on the land, the soil develops fertility very fast.

The fertility is not all in the soil beneath, but a large portion is in the atmosphere above us and the rains and snows bring down some of it, so, whether it rains gold or nitrogen, we ought to keep our dishes right side up. When we tile we cause the water to soak into the ground, the soil catches the ammonia or nitrogen and the water runs from the tile pure. When we allow some grass to remain on the land or top-dress it, we dam up or delay the water so that more of it soaks into the ground and pays toll as it goes. When we plow or otherwise open up the soil, more water soaks into it and more fertility is secured.

From the foregoing we conclude that the old idea is false that considers the soil but a mine to be mined out and then abandoned. It might better be called a laboratory, where problems in transmutation are solved and plant food is evolved.

Now as drainage, tillage, clover and manure are important auxiliaries in the manufacture of plant food, we will devote a word to each.

For drainage in this neighborhood, tiles are best and cheapest; and the lines should not be over three rods apart in white and red clays, and not over six in the black land. Thirty inches should be the minimum depth, unless it be in a basin that will soon fill up; and from three to four feet is a good depth for black land. The bottom should be well graded, for, if a depression is left, the tile will fill up with silt to the extent of the depression.

There have been several objections to tile drainage. One is, it makes the land too dry. Any one may ascertain just how true this is by comparing the crop directly over the drain with portions at different distances away. Another says that tile is no good, for he has tried it and has found it so. When we investigate we find that he ditched a field by running a line of three-inch tiles up one ravine where six-inch tile was needed and laid it just eighteen inches under the surface; of course the water runs over the surface and his tile does but little good, so the question is settled with him for all time. We might remark that he has outrivaled Ponce de Leon, for he has discovered the immortal fountain and bathed therein and always will remain a young man.

Tillage develops plant food very rapidly, except when the soil is too wet, and the farmer should do all the work of this kind for which he can spare the time. If the corn crop is not benefitted by it it will probably show in the wheat, but if the wheat winter-kills the clover following will take up the remaining plant food. If hands are scarce and horses plentiful one man by a little practice may drive more than one team and thus lessen the cost of the tillage. You will excuse me if I give away one of the secrets of the grange; the scantling drag is one of the best tools on the farm to grind up, move about and mix the different soils and should be used more than it is.

It has been remarked that clover helps the land. When I say clover I do not mean timothy and clover, for timothy may tear down the farm as fast as clover builds it up. Clover ought to be sown as often as every third year. If the wheat winter-kills do not plow up the newly sown clover, but clip off the weeds and mow the next growth for hay and also cut one or two crops the following year. The clover crop should have more care than any other crop on the farm, then the other crops will soon become good. Some sow clover once in ten years where timothy is already rooted, pasture it to the ground after the wheat is removed, call it a meadow for four or five years and plant it to corn four or five years; then they condemn clover because their land does not improve. Is it not very much like the tramp and his handful of feathers?

Leaving the clover subject for a time, let us turn to that of the treatment of manure. During bad weather the stock should be kept under shelter on a well littered clay or cement floor, yet when the cattle will not injure the pasture and the weather is pleasant fodder may be fed out on some poor spots of the pasture land, but most of the feeding should be done under shelter. If any manure must be hauled during the winter, do this while the ground is frozen and spread it thin on some level spots of wheat ground where the clover usually grows the poorest. But I think the best plan is to leave the manure under shelter until August, then spread from the wagon on the young clover; if there is not enough to go all over, select the poorest clover. Manure treated and applied in this way will do from two to ten times as much good as by the common methods. Let us make this more plain to ourselves. A and B are farmers. They shelter the manure, for they do not believe in leaving it exposed to the weather until three-fourths of its value is washed away, but they differ about applying it. A spreads direct from the wagon, while B unloads it in piles. He does not want it spread until he is ready to plow it under, because the rains will wash away the fertility. A says that he will show him how it will wash away the fertility, so he top-dresses a part of a hill-side where he expects to plant corn the following year. B waits until there comes a rainy time and takes A over and shows him the waste going on at the hillside. A is not convinced and waits until the corn is laid by; then he takes B to the hillside and shows him that the corn is nearly twice as good where the ground was top-dressed as that next to it. It shows to the very row, for the next row below does not show any of the effects of the manure. B also sees that his corn is poorer than A's.

Now how shall we account for this paradox? Let us conclude that both are partly right and partly wrong. The fertility did wash away, but the land's being covered for several months was worth more than the fertility plowed under.

To sum up: We keep manure under shelter to prevent leaching. We apply it to the level land so that it will wash into the soil. We top-dress so as to get the use of it as a mulch. We apply it to the young clover to make the clover do what other crops can not do. For the clover plant loosens up the soil a great deal, the roots are as fertile as the tops, and the tops contain more fertility than any other crop. So we should give clover a better chance than we would any other crop; then we will increase the fertility of our lands.

And now, friends, which shall we practice, extensive or intensive farming? Extensive farming means more taxes, more fences and buildings to rot down, and farther travel to and from work. If a man has five thousand dollars to invest in another farm, why not buy five thousand dollars worth of cheap corn and clover hay and feed it on the present farm, market the stock, deduct for the labor, and invest the balance as before, and so on? Or, to state it in other words, pile another farm on top of the present one, and then another, and another, and build the farm high enough before he allows it to overflow.

TILE DRAINAGE AND CLOVER.

By George Bargus, Collins, O.

[Read at the Independent Farmers' Institute held at East Townsend, Huron County, February 21 and 22, 1899.]

It has been said that he who makes two blades of grass grow where only one grew before is a benefactor to his race, and yet this can easily be accomplished. How? Tile-drain your land. All land except that which has a natural underdrainage is benefited by tile-draining. By tile-draining we draw off the surplus water, our empty tile forms a vacuum which nature hastens to fill so long as water is above the level of the tile, forming waterducts in all directions toward the tile; through those ducts air and warmth follow, enabling the roots of plants to penetrate deeper into the soil, and appropriate plant food which before was wholly beyond their reach. Sour, soggy land is transformed into sweet, dry, friable soil. Again, the large amount of fertility that falls on the land, brought down from the air with rain and snow is retained in the soil in the leaching process, showing again that nature helps those that help themselves. By tile-draining we also avoid the unsightly and dangerous gullies formed by the waters in the act of sweeping the fertility of our soils into ditches, creeks and rivers to be finally lost in Lake Erie. Those gullies also form machinery smashers, make sore withers and collar-boils on the horses, and many times cause the driver to think profane thoughts and cry out words he would never utter if he were passing over a tile-drain. We haul out barnyard manure, buy commercial fertilizers year after year only to see these substances washed away with every recurring spring freshet. Can we afford to continue this wasting process?

It will surely pay us to look more closely into the subject of tile-draining and if that will stop the waste and increase the fertility of our lands, making them more productive, let us commence digging as soon as the frost is out of the ground. Tile-draining is no longer an experiment. It has proven a paying investment wherever it has been intelligently laid on land that required a furrow or open ditch to carry off the surplus water without it. It will not only do all that is claimed for it above, but it will permit us in a wet season to work our land from one day to a week earlier after each severe rain and many times this day or week means the making or marring of our crops.

Again, the lifting of wheat and clover by freezing and thawing is reduced to a minimum on tiled land, seldom severely injuring the crop, while on untiled land we often find wheat and clover which promised well in the fall entirely ruined by the middle of April.

Three things are essential to the success of tile-draining. First, a sufficient outlet; second, a fall of at least one-half inch to the hundred feet; third, tile laid on an even grade. If either of these three things are lacking your drain will prove a disappointment, but with these three essentials your money invested in tile will pay a greater interest than any national bank stock on earth, and it will continue to pay big dividends long after it has paid you back in full all it cost. I have experimented somewhat in tile-draining and speak from experience. I have something over five miles of tile on my farm. Some lots have tile up through the low places with laterals into all depressions only, and those (that used to be) ponds of slush in the spring when we wanted to work the land are now the first to dry off. Other fields have tile regularly from twenty-four feet to two rods apart carrying off all the surplus water that falls on the land. My soil is clay and loam with a hardpan about two feet beneath the surface. On one of those thoroughly tiled fields my last four crops were an immense growth of mammoth clover, followed by two hundred bushels of merchantable potatoes per acre, next forty-two bushels of barley per acre, and last year twenty-nine bushels of wheat per acre, with no fertilizer other than the clover spoken of, and today a fine stand of clover is firmly rooted in the ground. My untiled land received a good coat of barnyard manure and two hundred pounds of high grade commercial fertilizer per acre, and produced the past year but nineteen bushels of wheat per acre. Tile that has been laid five years does not owe me a nickel, it has more than paid back its cost with interest.

Tile-draining insures a stand of clover, the farmer's greatest friend; without clover our farms must depreciate in fertility. The raising of leguminous forage plants was practiced by the ancient Egyptians, by the Romans, and by all the agricultural nations whose history we have down to the scientific farmers of 1899; but, although our ancient brethren seemed to know that leguminous forage plants made excellent food for stock and left the land in prime condition to produce other crops, yet it was left to our modern farmers to discover by chemical analyses that bacteria living in the roots gave these plants the power of extracting nitrogen from the gases of the air and storing it in the soil for future use. All have doubtless seen the little knots on the roots of clover and other leguminous plants; these are the homes, the workshops if you please, of our little friends. Thus with clover nature provides us the means of aiding largely in retaining the fertility of our soil by supplying nitrogen practically free of cost. Furthermore, the roots of clover penetrate deeply into the soil drawing potash from the subsoil and, with the decaying roots and stubble, depositing it where surface-feeding plants can assimilate it. The great value of red clover as a fertilizer is shown in many bulletins of experiment stations in the different states. The Massachusetts experiment station gives the following figures: "A ton of clover hay contained forty-six and eight-tenths pounds of nitrogen, nine and seven-tenths pounds of phosphoric acid, and forty-nine and three-tenths pounds of potash, the manurial value of which was ten dollars and sixty-four cents estimated at the same price as was paid for these substances when purchased in commercial fertilizers." As a general thing a farmer's soil is his only bank account. Just think of raising an acre of clover, and just when it is in full bloom plowing it under and increasing your bank account fifteen dollars; or cutting it for hay, turning it into beef, mutton, wool, milk, eggs, or pork, selling the finished product and returning the residue to the soil. The selling of clover hay at four dollars per ton is like selling gold dollars at forty cents each. Cut for hay all you can possibly feed on the farm; plow the remainder under; the fertility added to your soil is far in excess of what you can sell the hay for as shown above. For all kinds of stock that part the hoof clover is *the* feed, including pigs and chickens. For mules I have heard that the Canada thistle is a very nourishing feed. The horse thrives well on bright timothy hay, but it is claimed, and I think justly so, that a ton of clover hay will produce more beef, milk, mutton, wool, pork and eggs than a ton and half of timothy, and the residue in form of manure is very much more valuable.

A good clover pasture for hogs is an absolute necessity; pork can be raised much cheaper with it than without. We had a little experience the past summer. We, that is Smith and I, rather pride ourselves in having our nine-month pigs weigh a little more than the other fellow's, but this season caught us without a clover pasture. A neighbor, Smith's son, had a nice clover pasture, pigs about the same age, same stock, all other things about equal. He beat us forty-two pounds per head, which at three dollars and forty cents per hundred equalled one dollar and forty-two cents each. A cold, clean profit of one dollar and forty-two cents each on a sufficient number of pigs will change bankruptcy to affluence. We are lying awake nights planning how to always keep a clover pasture for our hogs.

Now whether our scientific farmers with their chemical analyses, their great magnifying microscopes making the minute bacteria looking like young elephants. are right in their estimate that a good crop of old clover plowed under will add as much fertility to the soil as fifteen dollars worth of commercial fertilizer, or not, is a question I shall not attempt to affirm or deny, but I do know from actual experience that a good crop of clover plowed under about the last of June will not only insure a good wheat crop, but will increase the yield of the three succeeding crops. I have also observed the great benefit of plowing under clover in others' practice. In the township of Clarksfield a field that ordinarily produced, when in wheat, from seven to ten bushels per acre, was manured by plowing under a crop of clover; result, twenty-five bushels per acre. It was seeded again with clover with the wheat, and again plowed under and sown to wheat, and the owner informed me he had thirty-five bushels of wheat the second crop. A nice stand of clover was growing in the stubble which he intended to plow under and plant to corn the next spring. I was not there the next season and hence lost track of this very interesting experiment, but sufficient had been shown to prove the great value of clover as a fertilizer. The cost of growing an acre of clover is about as follows: Seed seventy cents, taxes thirty cents, interest on land thirty cents; total, one dollar and thirty cents. Worth for manure, as shown above, fifteen dollars, something over one thousand per cent on the investment.

Take all these facts and fancies into consideration: The value of clover hay as food for stock. The value of clover pasture. The value of clover as a renovator of the soil, making it more friable and so largely increasing its fertility. The questions present themselves: Can any farmer afford to ignore this great wealth producer? Will it not pay us to keep at least one-fourth of our plowed land in clover all the time and return to the soil all except what we sell in the form of finished products of meat, milk, wool and eggs?

PLANT TREES.

By T. A. SCOTT, Westerville, O.

[Read at the Farmers' Institute held at Westerville, Franklin County, February 8 and 9, 1899.]

Possibly there are few subjects of more economic importance to the United States than the care and preservation of her forests. The fearful destruction by ax and fire, by tooth and hoof in every township and county in this state, and every other timbered state, may well fill the thoughtful with consternation and alarm. Time was in this country when every added acre won from the forest was an added blessing; but years ago it ceased to be so and now it is a blighting curse. The springs run dry, the streams shrivel to green and stagnant pools along their glaring channels, the floods seam and gully the hillsides and spread ruin and desolation in the valleys.

Seventy-five years ago Franklin county had an embarrassment of riches in her forest lands. To-day her good timber is in small and isolated patches, and, with the present heedless waste, what will be the miserable remnant left at the close of the next twenty-five years? All this change in a hundred years! Yet who does not devoutly hope that this Republic will endure for many hundreds of years.

With this calamity looming before us with ever nearing presence is it not the duty of every prudent landowner to do what he can to avert it? Is it not the duty of the state to encourage the growth of timber within her borders? Could not every hundred acres afford ten acres of wood lot? This of itself would not be much, but in the aggregate for the state it would mean a great deal. All steep hillsides and ravines should be planted with trees. Their roots open the ground for the water to find a deeper entrance, their leaves and fallen limbs and shade retard the rains and the snows in their ruinous haste to the valleys. Their lusty growth will be a delight to the eye, a cooling shade from the noontide heat, a benediction of moisture to the parched air, a sheltering harbor from the untimely frost, a serried phalanx against the fierce north wind.

If those who have woodland on their farms would cut out the old and matured trees, leaving the brush where it lies, and not permit a hoof of any kind to range over the ground for four or five years they would be surprised to find how quickly and how densely the forest renews itself. Let them stand for a few years more, as it is nature's way — and the the best way — to make straight and shapely trunks. You can now cut out the misshapen and undesirable saplings, transplant into open spaces and pile the brush in windrows across the line of prevailing winds to catch the drifting leaves. In a few years your wood lot is even better than it was before, young, vigorous and with only such trees as you designed to keep.

To him who would begin at the beginning, however, it is a matter of considerably more time and added expense. He must first choose the kinds he desires to grow, and this is a matter that must give him pause. He wants rapid growth, good lumber and enduring wood. He cannot afford to plant many oaks as they are of too slow growth. The elms are good, the nut bearing trees, walnut, chestnut, hickory, in the order named, the ash in variety and the maples, locusts, sycamore, linden and — you may smile — the osage orange. I have seen it forty or fifty feet high, with trunk straight as a plumb line, twelve or fourteen inches over and long enough for three post cuts. Hardy? Ask that fellow who tried to kill out an old hedge row.

After looking the field over — or the woods rather — and selecting the desirable kinds one must respect soil and locality in his choice of trees. On rather deep limestone or alluvial soil the black walnut is a grand tree for planting. And the prudent young farmer can sweeten his buckwheat cakes from the sugar orchard planted in such soils long before the evening of his life — in fact before its noontide. But why should I say that? The man who is not willing to do anything except what he himself shall profit by is not fit to live after almost two thousand years of altruistic teaching.

A seedling nursery is the only proper way to begin a new wood lot. Cultivate thoroughly and shade some. When you transplant take up all the roots, if you can, then cut back root and top to suit. Do not let wind or sun touch the roots, and plant right away. Use a tamper to ram in the dirt about the roots and mulch with anything that will keep the ground moist and cool. Do not attempt to do too much at once; remember that a small tree well planted will soon and far outgrow a large tree poorly planted. Plant thick and cut out. You think it will take a hundred years before such trees are of any account. You are very much mistaken.

When I was eleven years old I planted six or eight sugar maples on a prospective driveway to an intended building site on the home farm. We never built there but moved away. Fifteen years afterwards I was back at the old place and those sugar trees were ten inches through at the stump, thirty-five or forty feet high, with spreading thrifty tops, just such trees as the sugar maker delights to hang his buckets to. Again: Along toward the last of the 50s an old farmer of an eastern county began planting walnut trees in the fence corners along the road and in all corners that he did not use, dotting them here and there all over his farm — not for the ennobling love of the trees but that the passerby would think his farm all "walnut land." Years afterward he died and his sons by reason of drink and bad management sold the farm. I have been told the purchaser has sold those walnut trees for more than he paid for the whole farm.

Still, again: A gentleman of my acquaintance in an eastern county not so very many years ago was compelled to take a steep tangle of rocks, brambles, pokeberry, wild grapevine, paw paw, black locusts, and all the et cetera that grow on those precipitous, limestone river hills. Like a cat he was always sure to light feet down, in a deal. This looked at first much like a side fall. However he set men to work grubbing, smoothing and seeding, leaving only the locusts. In a few years he had a splendid blue grass sod and pastured town cows at twelve and fifteen dollars per season. He has taken two or three crops of locust posts from the land and over ten years ago he told me he had sold enough posts to more than pay for all the land and the work put on it, while other hillsides near it, no steeper and no poorer, but with less intelligent care hardly pay the taxes assessed against them. But why add more? Must we pile Ossa on Pelion to prove what you already know?

What should you do? Besiege your senator or representative in the legislature for some wise laws by which the man who neglects or wantonly destroys his wood land shall be punished; while the man who husbands and increases his wood land shall be rewarded. If he be a politician he may smile and smile and — put you off. If he be a statesman he too will have seen the need and do his best to help you.

But law or no law go to work yourself. Keep the stock out of part of your wood land. Plant some forest trees this spring if it be but ten. Plant them where they will not be disturbed but live to grow to a ripe and honorable age. They will add dollars to the value of your land and they will have a higher, nobler value to you, not measured by dollars. Those trees that you have planted and zealously watched and guarded through their long years of adolescent growth will have endowed you with a keener sight, a more sensitive hearing. You will come to watch them with an interest you never felt for trees before. The singing birds will come and build within their sheltering branches. The bright-eyed squirrels of the neighborhood wood will make them their trysting place. The flushed wayfarer will stop a moment in their grateful shade. And as they bud and leaf and bloom and fruit and throw down their gorgeous mantles on the ground to wrestle with the winter winds you will somehow feel that all this joy of bourgeoning life and fierce struggle is a part of yours. And as they take up their parts in the great anthem of Nature now loud and resonant in the storm, now soft and whispering in the breeze, you will feel that you have strung an added harp tuned to the mighty symphony and have heard a new song which has filled your very being with its melody.

And when the circling years, filled with the verdure and the music and the broadened thoughts from these your planted trees, have brought you to your last resting place, your silent, narrow home, these trees and the many noble deeds that they have caused will witness that the world is better by your having lived.

FRUIT GROWING.

By James Wilson, Jr., Lordstown, O.

[Read at the Farmers' Institute held at Newton Falls, Trumbull County, November 30, December 1, 1898.]

Fruit growing has become of national interest, whether considered as an industry for profit or as having a desirable influence upon the health and happiness of the people. Nearly everybody likes and enjoys a bountiful supply of fresh and well ripened fruit of every kind which is adapted to our climate.

Whatever may assist in making the growing of fruit more interesting and better understood and adapted to the wants, tastes and circumstances of the people cannot fail to serve the public good.

At one time apples were grown chiefly for cider. Now they are an indispensable article of food. The more delicious fruits were formerly considered luxuries for the tables of the wealthy. They are now the common supply of every man's table. With an appetite increasing from year to year, with the demand of increased supply of superior quality, whoever supplies the market with superior fruit, properly handled, will be amply rewarded for his pains and care. In this day of great production, over-production as some are pleased to say, to offer or force upon the market inferior, miserable or poorly handled fruit of any name or kind is a waste of time and labor and reflects discredit to the grower. Better engage his land and labor in growing crops for which both are better adapted and turn a miserable failure into a profitable success.

Fruit growing in Trumbull County as a business enterprise and source of profit until recent years was almost entirely neglected, with soil and climate capable of producing many of our native fruits and equal in excellence to any soil and latitude in the world. But many fruit growers make a mistake which is fatal to what might otherwise have rewarded them with success, by making selection of location and soil not adapted to the needs of the fruit that he wishes to grow. Seeing that your neighbor meets with success under very similar surroundings and conditions to that of your own, does not warrant another to engage in growing the same fruit with any hope of success. What we want to know is the nature and elements of which our soil is composed and then scan the list of fruits and plants that thrive upon the food which our soil has in store by nature for them; and with proper culture and care they will produce satisfactory results. The great forests teach us the same lesson. One plot of timber will be nearly all oak while in others ash may predominate, in others beech, etc., showing that certain conditions and needs unite, and corresponding results follow.

The apple stands at the head as the king of fruits and should be a daily supply in every home, should be liberally consumed by every man, woman and child. No fruit of our latitude produces such satisfactory results to the health of the liberal consumer, by freeing the system of impurities, as the apple, which may be grown in most soil but does best in heavy or clay soil, not too wet. No fruit trees will do good service in wet land.

The peach is perhaps the most delicious fruit of our climate and thrives in favorable localities of our state. The trees are more tender and shorter lived than any other fruit tree of our climate. In some localities they bear only two or three crops and die. In favorable soil they live twenty or thirty years and bear three crops in five years. Like the apple the peach has many varieties, very many of which in this section are worthless. About four or five varieties are sufficient for a market orchard. The peach thrives best on a high altitude with surface sloping to lower land and damper soil. The soil should be a sandy loam and dry. The peach will not thrive if planted in heavy clay soil or in any soil where its roots are imbedded in water. Never sow grain in your peach orchard. The best fertilizer for the peach is potash and phosphoric acid. Wood ashes, muriate of potash and bone are good fertilizers for the peach. Look out for air drainage as well as water. The cold air, or frost, drains off the same way that water does; it seeks the low places.

Some of the destructive enemies of the peach tree are the borer, the yellows and the San José scale, which latter is destructive to all fruit trees. At no time in all my experience in peach growing has the most destructive and dreaded disease known as the yellows made such inroads on our peach orchards as during the past season; and it is only by the liberal use of the ax that we may hope to exterminate it. To you peach growers I would say, be very watchful and cut down and burn every tree that shows any signs of the yellows. If you own a peach orchard it doubtless has the yellows developing. Remember, the law is strict.

The plum is also growing in popular favor. Like the apple it thrives best on heavy clay soil, and with proper management, if the buds escape freezing, will bear a fair crop of fruit annually. My experience with the plum on sandy loam soil has not been as satisfactory as the peach on the same soil. While not so extensively used as the peach the plum is coming in more general use every year. The varieties are lombard, German prune and green gage. The borer and black knot are some of the enemies of the plum. The fruit is often severely attacked by the curculio and the rotting of the fruit. Both may be partially subdued by a proper system of spraying. It is also necessary to remove by hand picking all rotten fruit from the tree as it develops.

The pear is properly classed among the most desirable fruits in common use in every home. It thrives best on clay loam soil, rather heavy and moist, not wet. The fruit should ripen off the tree and should be pulled when it will separate from the stem by gently raising the fruit. The most destructive enemy of the pear is the twig blight, which should be cut from the branch whenever its appearance is made. The best varieties are Bartlett, Clapp's Favorite and Flemish Beauty.

The cherry occupies a prominent place in the list of fruits, and in some sections has attracted attention as a fruitful source of revenue. Large orchards are supplying the nearby towns and cities with a bountiful supply of fruit. Every home in the country should have two or three cherry trees for its use. The cherry requires a light sandy soil and like the plum is affected with black knot, which should be destroyed as soon as detected. Good varieties are Richmond and English Morello.

The strawberry, for its earliness and delicacy to the taste and being the first fruit of the season, has won a place in public favor second to no other fruit of our climate. It is eagerly sought for by everybody, a universal favorite upon the list of fruits. There is a great variety of kinds and all appear to have the same strawberry taste. Fine varieties are Cumberland and Babcock. The strawberry is grown in every kind of soil and will thrive with proper care almost everywhere in our country, and may well be said to be everybody's fruit.

To be able to supply perfect and salable fruit as well as to supply our home needs, in this day of insects and disease that fiercely attack the fruit and trees of every kind, requires the growers to be diligent in their extermination or suffer irreparable loss. The San José scale referred to, while very destructive to the tree, is not well understood. The insect is a small, round, flat scale, a little lighter in color than the bark of the tree. It is about an eighth of an inch in diameter. In the middle of each scale is a small, elevated, shiny, black, round point. It is said that whtewashing the body and large branches of the tree will check the development of the insect. Judicious spraying with Bordeaux mixture will protect the apple, plum, cherry and pear from the moth and the curculio, but the knife and the ax are the only known remedies for the cure of black knot, blight and yellows.

SMALL FRUIT CULTURE.

By **Samuel Taylor**, Pleasant Corners, O.

[Read at the Farmers' Institute held at Pleasant Corners, Franklin County, January 13 and 14, 1899.]

I cannot give you more than a mere synopsis of the subject of small fruit culture, for there is no subject on which there can be more said, and we know by experience that different localities and different varieties require different cultivation to a great extent.

A brief history of the strawberry will be in order, that we may know something of what it was in ages past. It is of little consequence whether any particular kind of fruit familiar to us was know in ancient times or not, still, we find ourselves sending a thought back into the dim and uncertain past, picking up here and there a stray word or line that informs us that some of the fruits now cultivated by us were also known to those of former ages. The number of such old-time fruits is quite limited, and most of them are of quality so inferior that we would hardly be willing to exchange those of our times for the production of any other period.

The strawberry was probably not cultivated in olden times, as it is scarcely mentioned by the Roman writers on agriculture. Some who are most explicit in other matters pertaining to fruit culture do not mention it, while Pliny, Ovid and Virgil, only casually refer to it, and this reference is not for the purpose of aiding its culture.

From a few lines in one of these old works, we infer that the children in ancient times had similar tastes to those of the present, and that they found no day so hot, or hill so steep, as to deter them from seeking the little gems in the tall grass, or through bramble or wood. We who were so fortunate as to spend our youthful days in the country can appreciate the following lines of Virgil, as translated by Warton, which touch a heartstring whose vibrations send memory back to joyful days in the past:

"Ye boys, that gathered flowers and strawberries,
Lo, hid within the grass a serpent lies."

We learn from the ancient writers nothing in relation to strawberry culture that is of any practical value. We are, therefore, compelled to turn to those of modern times for any reliable information.

There are facts connected with the history of the strawberry that are important for us to know. For instance, from what country, climate or situaton were certain species derived? If a species came originally from a very warm country it is doubtful if it will ever be as well adapted to a cold latitude as one obtained from a climate similar to the one in which it is to be cultivated. By hybridizing, we may so intermingle species that it will be difficult to tell from what particular source they originated. Yet, if there be any feeble or tender elements in their composition they will be constantly showing themselves and will be a continual source of annoyance to the cultivator. It is for this reason that it is always desirable to know as much of the history and origin of a fruit as possible, especially if it is to be selected as the parent from which new varieties are to be produced.

There are instances where a species has succeeded better in a foreign country than at home, but such cases are exceptional and occur only where the climates are similar, or the species naturally had a very wide range in latitude.

The strawberry is probably more widely distributed than any other plant we cultivate. The Alpine strawberry grows in the mountains of Greece and northward to Britain, where, in the latter country, it assumes a different form and is there called the wood strawberry. The principal difference between the two is in the form of the fruit, the Alpine being conical while the wood varieties are round. The Alpine strawberry is also a native of North America, being found in high woods and fields in most of the northern states and far to the north in the Canadas.

About 1660 a strawberry grower at Montreuil, France, is said to have produced a new variety from the seed of the wood strawberry. It was called the Cappron, but afterwards the Fressant. This is the first improved variety of which we have any account.

The first account we have of the South American strawberry is in 1716, when Captain Frazier, in his voyage to the South Sea, found it growing at the foot of the Cordilleras. It was at that time called the Chile strawberry and the Spaniards said that they had previously brought it from Mexico. We might extend the history of the strawberry for innumerable pages, but it would be of little interest to any one but the most scientific growers.

SOIL AND SITUATION.

No one kind of soil is equally well adapted to every variety. A deep, rich, sandy loam is most generally recommended and is perhaps, on the whole, the best. Still a light sand or heavy clay may be made, with a very little expense, to produce abundant crops.

A deep soil, whether it be naturally light or heavy, is one of the requisites imperatively demanded by the strawberry. If the soil is naturally very wet it may require under-draining, but there are few farms on which a situation may not be found where deep plowing will not render the soil suitable for a strawberry bed. Thorough preparation of the soil is the very foundation of success, therefore no slovenly system, such as once plowing and harrowing, should be tolerated; the ground should not only be plowed, but cross-plowed, and if not naturally deep and friable it should be sub-soiled at least sixteen inches deep. If the cultivator will only bear in mind that one acre prepared in the best manner will produce more fruit than three or four acres fitted as is usually done he will understand the importance of doing it well.

There is not one acre of strawberries in a thousand that yields over one-half what it would if the ground were perfectly prepared before planting. It is with strawberries as with other fruits — too many acres and too little care.

The situation should be open and airy, because in such there is less danger of injury by late spring frosts.

To secure early ripening a southern exposure is preferrable, and for a late crop a northern one. By planting the earliest varieties in a warm situation and the latest in a cool one the season may be considerably lengthened.

MANURE.

The strawberry is not very particular as to the kind of manure it receives, provided it is in sufficient quantities. To tell a man who cultivates the strawberry on the rich prairie soil of the West that he must apply manure to his soil before planting would be considered a very foolish recommendation; but to undertake to grow them on almost any of our eastern lands without it would be equally absurd. In fact, most of our fruit growers in the eastern states determine their profits in advance, simply by the amount of manure applied to the soil, the more abundant the application the greater the profit.

All plants require food, and it is evident that if it is not in the soil it must be placed there, or no satisfactory results will be obtained. In Ohio as in the eastern states we gather fruit in proportion to the amount of plant food which we place in the soil.

Old and thoroughly decomposed barnyard manure is scarcely to be excelled for the strawberry, but it is often the case that a sufficient quantity of this cannot be obtained, and if so I would recommend the use of commercial fertilizer strong in potash, or unleached wood ashes, which I think is one of the most perfect fertilizers that can be used for fruit trees and plants.

TIME TO PLANT.

Spring and fall are the two seasons in which the strawberry is usually transplanted. Although with the requisite care the operation may be performed at any time during the summer, the spring seems to be the most natural and preferable time. The plants are then just starting into growth after their long rest. The small amount of foliage which has survived the winter is fully matured, consequently it calls for very little nourishment from the roots. The warm spring rains supply the plants with moisture, and the very atmosphere at this season appears to be full of life.

Fall planting is usually performed in August and September in the northern states. This season has one advantage, if the plants can be set so early that they will become firmly rooted before cold weather, they will sometimes produce a partial crop the ensuing season, as well as make a stronger growth than if the operation is deferred until spring.

When one has the plants so near at hand that they can be removed without having their roots exposed to the air for a few moments even, besides having an opportunity of selecting rainy or cloudy weather for the operation, then it may be done in the autumn with success. But when the plants are to be brought from a distance, and when, as it will often occur, they arrive in a time of drouth, fall planting becomes a doubtful advantage.

PREPARATION OF THE PLANTS.

When plants are taken up in the spring there will be more or less dead leaves upon them; these should all be removed, leaving only those that appear fresh and green. Some roots will be broken and the sound ones, if long, cannot readily be placed in the ground again without being crowded or otherwise thrown out of their natural position. To avoid any difficulty on this point, it is best to shorten them to at least one-half their length. This shortening causes them to throw out a new set of fibrous roots from the cut ends.

It also causes roots to be emitted more abundantly from near the crown than would have been the case if the roots had not been shortened.

It is not necessary to trim each plant separately, but a handful may be pruned at one cut of the knife. Plants thus pruned are more readily planted, and the roots are easily spread out at the time, which is quite important, because each root can produce rootlets without being entangled with others.

In transplanting in the autumn it is unnecessary to shorten the roots, unless they are so long that they cannot be conveniently planted entire. The roots of the strawberry continue to grow from the extreme ends until cold weather and when moved in fall or summer the roots should be taken up entire and carefully spread out when again placed in the soil. If the plants have been out of the ground long enough to cause the roots to have changed color and become dark and wilted they should be treated the same as those removed in the spring.

All of the large leaves should be cut off from plants when removed, leaving but two or three of the center leaves, as a plant is far more likely to live if only this number is allowed to remain on it than if none are removed. We are now supposing that the plants are taken up without any soil adhering to the roots. If each plant is moved with a ball of earth, then there will be no necessity for reducing the number of leaves, because the connection between the root and soil is not broken, or, at least, not entirely separated; consequently they can continue to absorb moisture and nutriment for the support of all the leaves.

Sometimes it may be advisable to "puddle" the roots, as it is called, before planting. This operation is performed by mixing water with soil until it is the consistency of thin mortar; then dip the roots into it, coating them with the mixture, which excludes the air and prevents wilting so long as it remains moist. A tenacious clay makes the best puddle, but it will sometimes adhere so closely to the roots as to become injurious. It is well to puddle, before packing, the roots of plants that are to be transported a long distance, and will consequently be a long time on the journey. But the puddling should be washed off and the roots trimmed before planting again. Roots that have been entirely excluded from the air for any considerable time are likely to become soured, and it is best to clean and refresh them with pure water before again placing them in the ground.

PLANTING AND CULTIVATING.

There is no one operation of more importance to the future success of a strawberry bed than careful planting. Some cultivators plant with a dibble, making a small hole in which the roots are thrust all crowded together in a mass. Plants may live under such treatment, but certainly cannot thrive as well as though their roots were carefully spread out in a natural position.

A common garden trowel may be used, or better yet a plant setter, of which there are several manufactured, that digs a hole leaving in the center a cone; by taking the plant in the right hand and holding it upside down the roots will fall over the hand, and by placing it on the cone the roots are nicely arranged as they should be. It is always best to select a cloudy day for planting if possible, but when only a few are to be set out they may be watered and shaded and their growth insured without any regard to the weather. The distance between the plants will depend upon what kind of cultivation is to be given them. The oldest method of field culture in this country, and the one practiced upon thousands of fruit farms at the present time, is to plant in rows from three and one-half feet to four feet, one foot apart in the rows. All the first runners that appear are cut off (those appearing subsequently should be allowed to grow) and the beds frequently hoed or kept clean with a cultivator. In the fall the entire surface should be covered with a mulching of leaves, straw or corn stalks. In spring the covering should be removed from the crown of the plants, but left on between them, for the purpose of keeping the fruit clean and the ground moist.

We will now pass from the strawberry to the raspberry.

SOIL AND LOCATION.

The common red kinds require a deep, rich, moist soil, and one that is rather compact, such as a heavy loam or clay. These succeed very poorly in a sandy soil, unless it be in the extreme North. The black raspberries succeed in both light and heavy soils, although they prefer the former.

To this peculiarity of the varieties of the two classes we owe in a general measure the diversity of opinion so often expressed by fruit growers from the different sections of the country.

SELECTION OF PLANTS.

One-year-old plants are the best for transplanting in all cases. Suckers are considered the best plants with those kinds which produce them, but plants grown from root cuttings, if the operation is properly performed, are equally as good, and sometimes they are really superior, because furnished with a larger number of fibrous roots. The same may be said of those grown from cuttings of the stems; they may be of the first quality or otherwise.

With those kinds which produce plants from the tips of the canes, it is more important to select none older than one season, because the old plants produce new fiber very slowly at the best, and when transplanted they are very likely to fail, even with the best of care.

PLANTING AND CULTURE.

Thorough preparation of the soil before planting is just as important with the raspberry as with other fruits.

Planting in rows and then restricting the plants to hills or stools, as it is termed, is the usual method.

The rows should be four to six feet apart, according to the varieties cultivated. With the red and similar varieties, four feet each way is the usual distance, but with the stronger growing kinds the rows should be at least six feet apart, and the plants four feet apart in the rows.

Select plants that have plenty of small fibrous roots, and set them no deeper than they were before being removed. The upper tier of roots is usually about four inches below the surface, but in some instances they will be at a far greater depth. It is not advisable, however, to plant deeply, because the suckers which spring from the stem below the ground, or from the lateral roots, will not come up so freely when the plants are set deep as when shallow. At the time of planting, cut the canes down close to the surface of the soil, because if they are left entire it will require nearly, if not all, the strength of the root to force the buds on them into growth. These will produce a few weak shoots, and perhaps some fruit, and then the canes will die down to the roots and no farther. The entire force of the plant is required the first season to produce canes if anything like a crop of fruit is expected the next season.

A plow or cultivator may be used among the plants for keeping the weeds down in summer, but keep the soil as nearly level as possible; never bank up the plants and let them remain in this situation for any considerable time. A small plow may be used to break up the soil between the rows whenever it is necessary, but the cultivator should be passed over it soon after to level it down again.

If the variety cultivated is one that increases by suckers, allow but one or two from each root to grow the first season and not more than six to eight from any stool in any one year thereafter, unless the production of plants is more important than that of fruit.

Clean cultivation is important, because if the plants become choked with grass and weeds, it will check their growth, and not only the fruitless canes will suffer for moisture, but those intended for the next season's crop.

With varieties which produce no suckers from lateral roots, but only from the crowns of the main roots, greater uniformity can be preserved in their cultivation. The only precaution necessary is to see that too many canes do not grow; three or four are sufficient, all others should be cut off when they first appear.

PRUNING.

Very little pruning is necessary with the raspberry, and in general field culture none is given, except to go over the plantation after fruiting and cut out, close to the ground, all of the old canes. Some defer this operation until winter or the following spring, but it is better to do it soon after the fruit is gathered, so that the young canes shall not be crowded by the old ones. Because no other pruning is generally practiced is not sufficient reason why it is not necessary, or that it would not be beneficial. The bearing canes should be pruned in the spring by heading back the leading shoots and shortening lateral ones. This operation is particularly beneficial to the black raspberry, and others of this class, inasmuch as they produce such long slender canes that they would be broken or bent to the ground by the weight of fruit unless severely pruned.

The principal canes, as well as the lateral ones, should be shortened to about one-third their original length. When pruned in this manner the fruit will be much larger and the plant will yield as many quarts as though the canes were left their full length. Besides, the plants will set more fruit when left unpruned than they can mature and all is lost.

BLACKBERRIES.

The same method of cultivation recommended for the raspberry is also applicable to the blackberry. In selecting a soil a rather dry one is preferable; it need not be so rich as that for the raspberry, because the varieties generally cultivated are large, coarse growing plants, and if the soil is too rich the canes will grow very large and succulent and will neither be so hardy nor so productive as those of moderate growth. It is a good plan to pinch off the terminal shoots the last of August or first of September, to check the growth and cause the canes to more fully ripen than if allowed to grow undisturbed. The plants should also be given more room than the raspberry, as they usually grow more branching and make larger stools. The rows should be at least six feet apart and eight feet would be still better for the larger growing kinds. The young canes should be headed back to four or five feet, and the lateral branches to a foot or eighteen inches. If too many suckers have grown, so that they are likely to crowd, a portion of them should be removed as directed for the raspberry.

Space will not permit me to speak of the currant, gooseberry, or grape, though much could be said on each of them.

THE SAN JOSÉ SCALE.

By D. H. NICHOLS, Nice, O.

[Read at the Farmers' Institute held at Amelia, Clermont County, February 28 and March 1, 1898.]

The San José scale first came into notice in the United States at San José, California, in 1873, though perhaps it had occurred there several years before. In the following ten or twelve years it spread through California and Oregon into Washington, causing immense loss of fruit; many thousands of trees have since then been destroyed by its ravages.

The scale was confined entirely to the Pacific Slope until about 1887, when it was developed in New Jersey through a shipment of fruit trees from California, and today is found in isolated districts throughout the length and breadth of the land.

This scale appears to differ from many other scale insects in that, instead of reproducing by laying eggs, the mother scale gives birth to her young, day after day from May till in October.

The young crawl out upon the branches of the tree, find a suitable place, attach themselves to the bark, and begin to secrete scales over themselves. In about thirty days the young scale is fully developed and soon begins to bring forth living young which, in turn, in about a month bring forth other young, and so on during the warm season; hence, according to Howard and Marlatt (Bulletin No. 3, U. S. Dept. of Agr., Div. Entomology) there are four or five generations each year, and during that time a single female may be the progenitor of one billion six hundred and eight million forty thousand and two hundred individual scales.

In the spring of 1890 a number of my neighbors and myself received a consignment of several thousands of fruit trees from J. T. Lovett, Little Silver, New Jersey. My part of the shipment consisted of five hundred Ben Davis apple trees and a few peach trees, which were pronounced first class by all that saw them. It must be borne in mind that at that time the San José scale was scarcely thought of by our people, only occasionally read about by a very few as being "away out in California" among the orange groves and apple orchards.

My trees were set out during April and the first week in May, and the entire orchard planted in corn. The trees grew nicely and I was more than well pleased with them.

In March, 1891, while my son was trimming the young trees, he found one that did not seem to be healthy; it had made but feeble growth and was covered with what he thought a kind of gray moss or lichen. He got some dry grass and weeds and rubbed the "moss" all off the tree. This tree afterwards died.

In May, 1891, the orchard was again planted in corn, the trees receiving the same cultivation as the corn. In the fall after cutting the corn one-half the orchard was sown to wheat, and in the spring of 1892 the other half was sown to oats. A space of six feet wide along each apple tree row was not sown to grain, but was cultivated twice during the season for the benefit of the trees. After the grain was harvested another tree was found similarly affected to the one described above. We cut off most of the branches, and then gave the tree a thorough washing with a strong solution of soap and water. This tree was afterward grafted and is making a good tree.

Clover was grown in the orchard in the summer of 1893; the trees being cultivated twice during the season.

The whole orchard was again planted in corn in May 1894. The trees grew nicely, as we thought, but in October, when cutting the corn, many of the trees were found affected as the two heretofore described. This created a good deal of anxiety as to the fate of my very promising orchard. In the mean time we were searching everywhere and hoping for some light on this mystery from any source.

Finally my brother living on an adjoining farm found one tree in his orchard affected as many were in mine. His trees having been received at the same time and from the same place as my own, suggested that it might possibly be the San José scale of California of which we had read and immediately, on the seventeenth day of December, 1894, we sent by mail a section of an infested limb to Mr. Bonham, then secretary of the State Board of Agriculture, Columbus, Ohio, asking for any information he could give. On the morning of the twentieth Mr. F. M. Webster, entomologist at the Ohio Agricultural Experiment Station, Wooster, Ohio, came to my house, introduced himself, and made his business known by showing my letter of three days before to Mr. Bonham. We went out to the orchard at once, and just as soon as he saw the infected trees he pronounced it genuine San José scale, the first he had seen or heard of in the state.

He told us that it was the worst pest fruit growers of this state had ever had to contend against, and we can truly sanction all he told us from our own later experience.

In the afternoon, after making a thorough examination of my orchard, Mr. Webster advised the cutting down and burning of all badly encrusted trees and the spraying of all the other trees with kerosene emulsion.

Consequently, in January, 1895, we destroyed about fifty of the worst encrusted trees; perhaps twenty others were sawed off about two feet from the ground, while a few, less infected, were cut off leaving the main branches about one foot long; then the stubs were painted over with kerosene, using a common varnish brush. This treatment killed all the scales.

The remaining trees in the orchard were, in February and March, thoroughly sprayed with kerosene emulsion, using the following formula, viz: One gallon of soft water, one pound of soap, two gallons of kerosene.

To make the emulsion put the water and soap in a vessel over a fire and bring to a boil, thoroughly mixing them, then remove from the fire and add the kerosene, agitating with a force pump until the mass has a creamy appearance; this will usually take place in five to fifteen minutes. When using this emulsion we dilute with rain water, using five parts water to one part emulsion.

In April all the stubs of trees cut off above the ground were grafted and are making good trees.

The orchard was again sprayed with kerosene emulsion in February and

March, 1896, and we thought we had the scale in subjection, if not exterminated, but we were sadly disappointed, for during the summer and fall they multiplied wonderfully. Mr. Webster says it was the same all over the state, something they were not looking for.

Again in February and March of 1897 the trees were sprayed, this time with clear kerosene, the best head-light oil on the market. Result: we have some dead apple trees and some scale.

We think the vitality of the trees that died was so reduced by the ravages of the scale that they could not resist the action of the kerosene, perhaps some of them would never have come into full leaf if left alone, but, be this as it may, we still think that clear kerosene is the right application to make to trees infected with the scale. It is death to every scale it touches.

We are spraying our orchard this winter, using kerosene on all trees that have many scales and kerosene emulsion on all other trees.

WEEDS.

By L. B. Pierce, Tallmadge, O.

[Read at the Farmers' Institute held at North Springfield, Summit County, December 23 and 24, 1898.]

On a byroad, alongside of a fine twenty acre field was a fence of about forty rods in length laid in the zigzag fashion of the olden time. Its owner was thrifty, careful and neat, and no briers or weeds grew beside it save a single blackcap raspberry on which the fruit was so fine that he purposed getting from it some young plants to set in his garden.

In this promising location Nature resolved to plant one of those wild gardens so common along roadside fences.

A mile or more from here a flock of Spanish merino sheep was kept. They were covered with wool from their tiny hoofs to the tips of their noses, and their faces reminded one of the captain of a foot ball team, for their eyes could scarcely be seen. One autumn night two wolfish dogs attacked the sheep and chasing them over a low place in the fence scattered them far and wide, cruelly wounding some besides. One sheep, with a gaping wound in her side, ran through a wild corner of woods and amid roadside weeds until finally exhausted she crawled behind the raspberry bush in the clean fence row, to die. Opossums fed upon the carcass until finally there was nothing left but wool and bones.

In the spring a pair of robins proceeded to make a nest in the fence near where the sheep had died, and, after they had built a foundation of sticks and covered them with mud well trowelled down, they lined it with the lock of wool which once covered the skull of the deceased sheep. In this wool were some burrs commonly called sticktights or beggar's lice, (known to botanists as hound's tongue), some Spanish needles or seed of the fetid marigold, also some stickseed or shoe pegs, and a single bur of the burdock. All these had been gathered by the poor, frightened sheep as, sore and wounded, it ran here and there to find a place of refuge. The nest was completed by lining with thistle down which of course had some adhering seed. In the sticks were some branches of last year's blackberry canes on which a few dried-up berries still remained. Now in this batch of seed in the bird's nest Nature had a very fine start, if they were only in a position to grow.

If the wool had remained upon the skull there would have been but little chance for their growing, and in the robins' nest the chances seemed slimmer still, but fortune favored.

There happened along a man with a traction engine and running short of coal, he made some of the top rails of this very fence into fuel, dislodging the robins' nest in the act. It fell in a demoralized condition to the ground; the clay mingled with the wool and sticks, and after some rain the seeds sprouted and the first of Nature's sowing in this special garden began to grow. The stickseed which was like a slim piece of hard black wood pointed at either end, sprouted first and slowly grew to be a beautiful branching plant with leaves like a fern, and when the blossom stems came out one would have thought it was going to bear fennel or dill, but after the fine white flowers had faded in August there was nothing but the little sharp seeds to stick in somebody's clothes.

The beggar's lice made a showy, bright looking plant filled from bottom to top in July with bright red flowers mixed with leaves which were shaped like a dog's tongue, and in September scores of little prickly nutlets ripened, they like the others to stick in somebody's clothes or to a cow's tail, to be carried to a new place of growth. The Spanish needles managed to send up one plant from a dozen of the awned bootjacks which were in the wool, but, robbed somewhat of the water it likes so well by the overhanging raspberry bush, it made a stunted growth; however, after the manner of this plant, it managed to perfect a few seeds. The burdock contented itself with making a fine growth of broad leaves wherewith to protect the long root necessary to push its magnificent and voluminous growth the second summer. A small blackberry bush and several thistles completed the planting from the wrecked birds' nest.

During the second autumn a rabbit was wounded upon an adjoining farm and after lying awhile in a thicket of weeds until the blood clotted upon the wound it managed to move along until it reached the fence row under consideration, where it died, and a nephew of the opossum which devoured the sheep feasted upon its body leaving the skin where it lay. Clinging to the bloody fur was a berry of the false bittersweet, that pretty vine which festoons the fences in autumn with its orange colored fruit; a spray of nettle seed, and a single seed of the closed gentian. In time gentians, nettles and bittersweet were added to the garden.

Later a covey of quails passed the night near the fence and a lively weasel nabbed one and sucked its life-blood. In time the contents of its crop fell to the ground and there sprang up a wild grape, a barberry bush and a thicket of wild buckwheat. A city lady out gathering autumn flowers threw a branch of dogwood berries from her carriage, and the following spring a plow which had been used to plow the highway left a clod in which were some elder roots, some seed of the poison ivy and a bit of rooted dewberry vine. Thanks to a wet summer all lived and proceeded to take possession of the ground.

Later still a load of hay grown by a careless farmer passed and a single lock which fell to the ground had seed of two kinds of plantain, some "gill run-over-the-ground", a stalk of dock, some whitetop, some shepherd's purse, and a mullien stalk. Thus a single gust of wind added seven kinds of plants to Nature's garden. I have not time to tell how goldenrod, iron weed, evening primrose and a dozen other kinds of weeds got there, but they found the place. The death of the owner at an early stage of the garden and the renting of the farm gave everything full liberty; each succeeding tenant plowed a little farther from the fence, until after fifteen years, the garden was wide and long and high — a perfect thing in its way.

The midst of this wild garden was a little world in itself. Woodchucks, skunks, blacksnakes, weasels, opossums, mice, moles, chipmunks, toads, snails and lizards found a snug covert where unmolested they led the existence natural to them; bugs and worms innumerable burrowed in the ground and crawled upon the surface; birds nested in the shrubbery, and spiders and web worms spun in the branches; angleworms brought up earth from below, and the wastes from countless bodies, from the plant louse to the woodchuck, enriched the surface, beside the annual crop of dead leaves and frost-bitten vegetation. Here snakes shed their skins, snails left their outgrown shells, beetles' wings and the skeletons of mice were scattered on the ground. It was a vast laboratory where all the fertilizers needed for a most luxuriant vegetation were daily compounded; seventeen kinds of woody shrubs, twenty-nine kinds of weeds and a dozen grasses grew along the forty rods of neglected fence. It was a place where the zoologist, the entomologist, the chemist and the botanist could spend days in valuable research.

It was the nineteeenth century climax, in the fertile soil of Ohio, of those words of God to Adam in the Garden of Eden, "Cursed is the ground for thy sake: in sorrow shalt thou eat of it all thy days; thorns also, and thistles shall it bring forth to thee."

Perhaps you may think some of these ways in which weeds came to start far-fetched, but if you should try to account for the way in which a clean piece of ground becomes planted with things which are not eaten by birds you would find it no easy task. I was led to think upon Nature's fence row gardens by cleaning some of them up, and, later when digging potatoes, by finding the body of a dead rabbit with seeds of bittersweet, gentian and nettles, besides a dried alder leaf, sticking to its wounds. Bittersweet is only found here and there, and the combination of seeds and leaf I knew could be found in but one place, and that in a swale upon a neighbor's farm, one hundred rods from where the dead rabbit lay.

The more one studies the matter of weed and tree seed distribution the more interesting it becomes. Doubtless the seed and grain eating birds are the most important agents in distributing many kinds of weeds. The fact that sometimes the seed may be in their crops some time before being ground up into food makes it possible to transport seed through several degrees of latitude. Crows and wild geese flying at the rate of from fifty to seventy miles an hour might transport grain and weed seed from tidewater Virginia to Wisconsin, or wild rice from Winnepeg to Missouri. In my boyhood a neighbor shot a wild goose and from corn in its crop grew a variety resembling ensilage corn and entirely distinct from any grown in Ohio at that time. Fruit and stock cars which traverse the entire country, scatter seeds of all kinds, as they are lodged in crates or on the feet of men in loading, as well as the feet of cattle and sheep. Texas weeds have sprung up near Buffalo from the cleaning of stock cars. The gathering of wild bouquets by picnic parties and ramblers from the cities no doubt sows many seeds.

I once took a train in Milwaukee for Chicago. Two girls sat near me who had gathered in Northern Wisconsin a large bunch of oxeye daisies which they called Marguerites. Many were nearly ripe and as the petals fell they were tossed out of the window until finally the whole bunch was thrown away, thus having sown the road bed with daisy seed every mile or two between the two cities.

When we consider the almost infinite number of ways in which seed may be transported, it scarcely becomes necessary to believe as many do that seeds lie in the ground for many years waiting for air and light to germinate. I remember that a friend called attention to the weeds which were growing around his newly dug well as an instance to the point. The well had been in process of construction the summer before at different times from oats harvest until winter as time could be spared. A low mound formed from the earth had been graded around the curb. Some of it had come from forty feet beneath the surface. The weeds were given as a proof of the theory, yet I found two kinds of plantain and orchard grass all of which had been introduced from Europe and no seeds of which could have been far below the surface. There were also tufts of oats and wheat. I explained the matter by the supposition that farm hands had scattered the seed from muddy boots or from pockets or turned up pants' legs.

While civilization and advanced agriculture have given us so many avenues by which weeds are disseminated, the natural ways are still in force and with both together there is good reason why weeds multiply as the country grows older. The compositae to which most floating seeds, as goldenrod, thistle, fireweed, and dandelion belong have wings or parachutes, and rise upon a stiff breeze and are carried everywhere.

Other seeds like dock float upon water and are borne to new places along water courses and on bottom lands. In this way when the farmer carfully digs a lot of docks with almost mature seed stalks and deposits them upon the highway he may be planting some other farm with the noxious weed, should the road-side water chance to flow over it. In any event when the road becomes muddy some of the seed will be carried by the horses' feet into many carriage yards and stables to be distributed therefrom as chance may direct. Farmers cut all kinds of grain more or less green trusting to its ripening upon the stalk, but strangely enough never seem to think that the same thing will happen with nearly ripe weeds.

The burs and awned seeds have their own way of getting there as we have already seen and the sheep pens of Chicago are stocked with burs that matured upon the plains of Texas.

Another friutful means of weed dissemination is the winter wind when the ground is covered with crusted snow. Weeds and seed pods are broken off when brittle with frost, and the fierce wind blows them as far as the surface is unobstructed, sometimes carrying them over the fences on high drifts and scattering them for miles. It is considered a new and wonderful thing that the Russian thistle travels so easily, but the same thing has been going on with other weeds since the forests were cleared away. The spirea opufolia is a marked example of winter seed sowing. It bears its seed in large clusters and the most of it hangs on until broken off by winter blasts when it is blown long distances on the snow. I have two of the shrubs in my dooryard and have followed the seed across two farms on windy days when my sledding happened to lie in the direction of the prevailing wind.

Several lessons may be drawn from the facts which I have marshalled. There is no fact more true than the Bible promise: "To him that hath shall be given," and this is as true of weeds as of money or talents and applies to communities as well as to individuals. Our highways are most prolific means of weed production, and the belated annual mowing which they get does not check the worst weeds which have already matured seed. Fence rows are another fruitful source of weed propagation and I wonder why so many farmers maintain long lines of fences with their wasted land and crops of weeds. Absence of fences settles the matter of unnecessary weeds for when your corn furrow laps onto the oats and only a dead furrow separates the corn from the wheat there is not much chance for weeds, briers and elderberries.

The farmer who keeps the roadside fences clean, has no internal fence, and practices the three year rotation has practically reduced the weed question to its lowest terms. Mr. Terry is a good example along this line. He sows wheat upon a clean surface; the next July he clips the stubble at a time when the weeds receive a severe shock and, before they recover, the rapidly growing clover smothers them and very few of the weeds troublesome in wheat stubble get a chance to mature seeds. In wet seasons he clips again. Many other farmers clip wheat stubble but they wait until the weeds are nearly mature and thus not only lose the weed destroying part of the process but seriously injure the clover, as it has to fight the overtopping weeds which shut out air and sunshine, while they rob the soil of moisture at the dryest period of the year when the clover could easily use all there is. A good many farmers follow Terry, as Peter followed Christ, a long way off, and then complain because they do not get equally good results. After Mr. Terry has smothered the weeds by a heavy crop of clover he plows the clover down and gets a comparatively clean soil for potatoes which are kept rigorously clean even to hand pulling any late starting weeds after horse cultivation has ceased. A crop of wheat is then sown, leaving not a single day for weeds to start between crops.

How different is the situation of the market gardener whose land is bare many months of the year, many crops coming off too late to sow any second crop of vegetables, yet early enough to grow and mature an unsightly crop of weeds. Early potatoes, early cabbage and first early sweet corn all come off in July, a little too late to sow anything but a cover crop of buckwheat, rye or turnips, and many gardeners are so busy with the team as to be totally unable to spare it for plowing the ground. I had considerable experience along this line the past season. A patch of early Wakefield cabbage and some Cory sweet corn were kept entirely clean up to July 1st, the cabbages being entirely marketed by July 17th. The corn was on a very weedy piece of ground, and was carefully hand hoed twice, yet by the middle of September the weeds were nearly as high as the corn stalks, the ears having been picked six weeks before, and the cabbage stumps were so entirely hid that one could need to look twice to realize that a crop of cabbages had been grown there.

In another place one hundred and twenty-eight rods of new and very fertile ground containing over fifty big and little stumps, was planted to new queen potatoes about April 7th, and was kept conscientiously clean, being hand hoed once and given two days of hand weeding after the potatoes were too large to cultivate. Seventy dollars worth of potatoes were marketed, (at one dollar per bushel) during the first two weeks of July besides about a dozen bushels of small ones, which were saved for seed, worth three or four dollars more. The ground would have brought a fine crop of turnips, but there was no time to fit up the stumpy ground, and by time to hunt rabbits there was such a growth of poke weeds, and other weeds which were not poke (although they poked up about six feet high), that a man could scarcely crowd through, and it might have taken some argument to convince a skeptical man that the ground had been clean of weeds in May and June.

It might be no more than just to say that Mr. Terry's way, to which I have referred, cannot be practiced by all farmers because it does not fully meet the demands of agriculture. The market demands, and a majority must grow, corn and oats, both more or less weedy crops and unavoidably so in a wet season in clay lands. Farther than this, the market gardener has one thing which the farmer is not bothered with to the same extent and that is very fertile soil, enriched annually with more or less weedy manure. Some farms are so poor that they will not bear weeds high enough to make much show, while the market gardener's soil should be rich enough to bear weeds six feet high.

There are two more points which I wish to cover before I leave the subject. One is that weeds are a blessing rather than a curse. They speedily cover all waste places and do for neglected places exactly what the good farmer does for his land when he keeps it constantly covered with some growing crop. I have referred to land which will not grow weeds for there is such land

and every observing person knows how Nature tries to reclaim such land, by a succession of weed crops adapted to its impoverished condition. She commences with sedge-like weeds and annual grasses which scarcely grow big enough to bear seed the first year, but scant though the growth is, leaves lodge in it, insects perish in it, and step by step higher forms find enough humus to sustain growth until finally the land becomes redeemed, and if undisturbed begins to grow shrubs and trees, which in time restore the soil to a primitive and highly fertile condition. In the South Nature has been permitted to rejuvenate many thousands of acres, the process taking from twenty to thirty years. In cases where Nature has had full sway for many years as in a neglected fence row the acquired fertility is remarkable and I know cases where a fence row between two old fields shows a plain superiority over adjoining fields even after twenty years of cropping. I honestly believe that if some farms which have been subjected to a long period of skinning were equally divided, and one-half given over to weeds while the labor and manure previously applied to the whole were used on the half, that just as much profit would be gained, while half the farm would be acquiring a new lease of fertility which would be surprising in a few years. I believe that a systematic planting and growing of two kinds of weeds would hasten the end aimed at, and the two I would try would be the burdock and the common thistle, commonly called bull thistle. They both have long roots and their rapid spreading growth causes them to wholly or mostly take possession of the ground for the time being, yet they are easily eradicated as soon as the land is brought under clean cultivation. Farther than this, land becomes fertile when given over to their growth. It would be comparatively easy to plant a field of burdock, as the burs could be stepped into the ground a step apart when the ground was soft and they would doubtless germinate. Thistle seeds would be more difficult to manage, for it is an interesting fact in weed dissemination that the very means given weed seeds for flight or distribution leads to the destruction or loss of a great many, so that thousands never grow up where one succeeds. This is especially true of the winged or downy seeds, those which like dandelion and thistle float upon the breeze. Their very lightness prevents their reaching the ground if brush or grass intervenes, and thus comes about the phenomenon often seen in former years of a field being heavily stocked with large, seed bearing thistles and two years later having but few. The grass and weeds prevent the seeds from getting in contact with the ground. Dandelions for exactly the opposite reason grow freely in closely mown lawns in the cities. The grass is cut short and the dandelion seed floating in the air lodges in the short grass with the seed so near the ground that the passage of the lawn mower presses it into the ground and, the soil being moist from daily sprinkling, a good portion of the seed germinates and thousands of dandelions spring up.

The last point I wish to call attention to is that some of our common weeds very likely have value from a fodder point of view. One weed which horses, stabled in the summer, eat with avidity is the burdock. I do not have much to feed but I notice it seems to be a palatable food in spite of its nasty bitterness. This weed is thought to have medicinal qualities and enters into the composition of blood purifiers, so it might be that the burdock would not be a safe thing to feed upon a large scale.

The common goosefoot or pigweed, known to botanists as chenepodium album, is eaten with great eagerness by cows, they seeming to like it full as well as cornstalks either green or dry. I have a piece of very rich land where sheep were yarded several years ago, and whenever I have sweet corn upon that spot I am able to raise enough pigweed to test the matter of its forage value. In fact it is no trouble at all to grow it as high as the corn. A few years ago the state laws of Ohio made the melliot or sweet clover a noxious weed, (and possibly do yet) although thousands of pounds of seed are sown annually for bee pasturage and stock forage.

If people were so ignorant of the value of sweet clover as to make laws against it so that a farmer is guilty of a misdemeanor who grows it, it is possible that we have not found out all there is about a number of other weeds we have, and it would be well to ponder some upon these possibilities.

HOW I RAISED THREE THOUSAND BUSHELS OF POTATOES FROM TEN ACRES.

By H. B. Coe, Mantua, O.

[Read at the Farmers' Institute held at Randolph, Portage County, February 13 and 14, 1899.]

Early in the fall of 1897, according to my custom, I laid my plans for work on the farm for the coming year. The field selected for potatoes has a gradual descent to the east, with a depression running east and west through the center, through which a four-inch tile is laid, and connected with several branch tile, that drain what were once "cat swamps," or "beaver wallows" as they are sometimes called.

The field selected was a clover and timothy sod, seeded two years before, but badly run out on account of dry weather, so that but little clover or timothy remained.

Early in the winter we began hauling manure from the stables and barnyard, as the other work would admit of our doing, continuing all winter, putting about fifteen loads to the acre and spreading as fast as hauled.

The last week in April, after the sugar camp fixtures were all in place, we started the plow, turning a furrow about seven inches deep and following the plow each day with a planker or float. The next implement we used was the disc harrow, going twice or three times over to properly fit the ground for the acme harrow. This with a seventy-tooth pulverizer we used until a perfect seed bed of good depth was obtained. Once over this seed bed with a planker or roller and we were ready for the marking.

On level ground I prefer a wheel marker, but having a three-shovel, one-horse marker ready for use, and a horse well educated for the work, we used it, making the rows thirty-four inches apart and four inches deep.

As the weather was threatening we started a second marker in order to get the planting well under way before the storm. As soon as we began cross marking we commenced planting, by dropping by hand and covering with a horse and planet junior cultivator. The seed used was "Carman No. 3," all large potatoes and cut to two eyes and one piece to the hill. By the way, I do not favor cutting the seed much before using, because of its liability to rot. It required from sixteen to eighteen bushels to the acre.

In assorting seed we took out all small potatoes and those not true to the "mother seed"; this is, in our opinion, the only way to secure good seed and put off the day of run-out potatoes. But try as we may that time will come, much as we would like to continue to raise some of the beautiful varieties that have had their day and, according to Nature's decree, have passed into history and given place to other varieties, as productive, perhaps, but in quality inferior to the "peach blow" and "snowflake."

We began planting about the eighteenth of May. A few hours after the planting was started a heavy rain came on, filling the marks and packing the ground so that it was impossible to plant as deep as we had intended, viz., four inches. If no potatoes had been planted up to this time, we should have again started the pulverizer, but there seemed no other way except to continue planting and cover with the hoe.

One week after planting was finished we started the weeder, but found that it tore out many shallow planted hills and as the marks could plainly be seen, giving no trouble to follow the rows, we changed from weeder to cultivator and continued cultivating, going over the field eight times both ways, cultivating the two last times at a less depth and finishing up one way with the despised shovel plow. I do not advocate its use except in certain cases, but with shallow planting and frequent rains, and on land inclined to wash one way, I do favor it.

Just as long as the horse and cultivator could pass through the rows without injury to the tops, we continued to work the field.

From the time the potatoes were planted until we ceased to cultivate, we fought the bugs: first, by putting poison on potatoes scattered in the field, later by using plaster and Paris green, and lastly, there being a strong wind, we used basket and paddle, any way to kill them, but kill them we did.

A word about cultivating — it requires thought, attention, a steady hand, good tools and horse and a quantity of brains to run a cultivator; indeed, a crop may be half ruined by carelessness in this important work. It will pay well to go through the field on the ends of the rows and use a hoe where the cultivator fails to do the work, also, as we do not go all over the field with a hoe, we want all of the hills that lack sufficient earth on all sides to receive attention while cultivating, as well as all weeds pulled that may be in the hills. This the man who runs the cultivator must do even if he stop many times while crossing the field.

Early in October help was secured to harvest the crop. The price for digging was five dollars per acre, the potatoes to be placed in wagons or in heaps and covered with straw. We intended to begin digging the second week in October, but excessive warm weather caused us to put off the work nearly one week.

Effort was made to contract the entire crop at thirty-five cents delivered at the station, but as this variety matures so late, early shipment was out of the question.

As soon as the crop had matured, we hauled directly from the field until we had loaded four cars, averaging five hundred and fifty bushels each. We find it desirable to engage a car and load independently of others, thereby saving both man and team many hours delay. The balance of the crop was put in winter storage or sold for seed. The average price for the entire lot was nearly thirty-two cents per bushel.

Of the entire amount grown on this field there was not to exceed seventy-five bushels too small for sale and these were eagerly sought at the same price by parties preferring small or whole seed to large.

I have given you a detailed account of how I raised this crop. To many, and perhaps all of you, not one new idea has been advanced, and you ask, "To what do you attribute the large yield?" I answer, first, the kind and quality of seed used; second, the well fertilized field; third, the thoroughly fitted seed bed; fourth, the constant cultivating and keeping free from weeds; and last, but by no means least, destroying the potato beetles before they had destroyed the plants. These things, together with abundant rain and growing weather, secured for me the three thousand bushels from ten acres.

But I cannot leave this subject without giving the experience of others who have followed the same course as myself. On five acres on a neighboring farm there were produced fifteen hundred and eighty-five bushels last season. Fertility, good seed and thorough cultivation did the work.

A few years ago on a field that joins the one from which I raised my crop last year, my neighbor produced from four acres for three consecutive years over twelve hundred bushels per year, or in all thirty-six hundred bushels. He selected his seed as he dug the potatoes, saving only the very choicest hills and largest potatoes. His fitting and cultivation of the ground were always perfect. The farm, having so good a record, was sold for one hundred dollars per acre.

Last year the present owner planted the same field, less fertile than before, using poor seed on poorly fitted ground, with cultivation still worse, and he secured about one hundred and forty bushels per acre.

In conclusion, as long as our occupation is tilling the soil, let us be thorough in all our work and thereby "magnify our calling," and though hardships and trials fall heavily upon us at times we can make our farm homes the best homes in the land.

TAXATION AND PUBLIC EXPENDITURE.

By Hon. James R. Garfield, Mentor, O.

[Read at the Farmers' Institute held at Painesville, Lake County, February 1 and 2, 1899.]

Of all powers of government, that which affects the people most is taxation—the taxing of private property for the benefit of the body politic. The exercise of this power is the vitalizing element of government. Without it, government becomes a nullity — its abuse produces inevitable hardship and disaster; its proper use promotes progressive civilization. Hence, the need of the people to understand, not only the system of taxation which they impose upon themselves, but more especially the principles or theories of taxation, from which may be evolved a system under which the greatest benefit can be obtained with the minimum of inequality.

We may start with the proposition that no system of taxation can be absolutely equal in its burdens or absolutely just in its operation. We can simply approximate the desired result, and by degrees, through experience, remedy discovered evils. Primarily, the subject must be separated from all political prejudices, using the word "political" in its ordinary sense. Taxation is purely a business question and practically, in most communities, the largest business of the community, measured in the amount of money involved. For instance, the total amount of taxes raised by levy in the state of Ohio in 1897 was nearly forty-five million dollars; while in our own county during that year nearly two hundred and thirty-four thousand dollars was collected from the people and expended for various public uses. It, therefore, behooves us to inquire carefully into the system of taxation, the manner and objects of expenditure.

Prior to the present constitution, the burdens and inequalities of taxation were even greater than at present, and the framers of this constitution sought especially to correct those evils. The provisions adopted seemed at that time to solve the problem. It was provided "that the property shall be taxed by uniform rule according to its true value in money" permitting, however, the exemption of property used for religious, educational or charitable purposes.

The Legislature thus having power to tax all possible kinds of property at a uniform rate, it was hoped that the burden would be equitably imposed. But the practical operation of the laws enacted under this constitution have developed so many faults that we seem to be as far as ever from even approximate justice.

Before discussing these faults, however, let us get clearly in mind an outline of the system. We have five general divisions of government, each clothed with the power of taxation, viz: State, County, Township, School and Municipal; while under the last, Municipal, there are subdivisions, the outgrowth of special legislation. Each division acts without regard for, and not in harmony with the others; subject, however, to certain limitations as to the purposes of the tax and its maximum rate.

The valuation of property upon which these various divisions levy their taxes is fixed as to personal property by the sworn return of the individual. Corporations (except express, telegraph, telephone and railroad companies) make a direct return of their personal property to the auditor of the county. All the property, both real and personal, of express, telegraph and telephone companies is appraised for taxation by a Board of State Assessors composed of the Treasurer, Attorney General and Auditor of State. The property of railroad companies is appraised by the auditors of the several counties through which the railroad passes.

The returns made by the individual and corporations (except railroad companies and banks) are subject to equalization by a County Board of Equalization which has power to change special returns provided it does not reduce the value of the real property of the county as appears by the duplicate of the preceding year. In addition to the action of the Boards of Equalization, the county auditor is vested with power to investigate and correct false or incorrect returns.

Another board, namely the State Board of Equalization for banks, composed of the Governor, Auditor and Attorney General, has power to equalize the value of bank shares, but cannot increase or reduce the aggregate value as returned by the several county auditors by more than twenty per cent.

Real estate is appraised but once in ten years by assessors elected by the people in the townships and municipal corporations. Their returns are reviewed by the county or city Decennial Board of Equalization and finally reviewed by the State Board of Equalization which consists of one member elected from each senatorial district of the state.

The final action of all the various Boards of Equalization is reported to the county auditor who levies or apportions the taxes laid by the various tax authorities.

It is thus readily seen that there can be no general uniformity in valuation of the different kinds of property. Finally, the taxes are collected by one officer, namely the county treasurer; this being the one really commendable feature of the system.

Theoretically, this system would be good if human nature were perfect. In fact, almost any system would work well under such conditions. Practically, the system is a dismal failure because human nature is far from perfect. We can readily trace the steps which have led up to present conditions. The enforcement of the constitutional provision, requiring that all personal property shall be returned by the owner at its true value in money, so far as it relates to intangible property such as stocks, bonds, notes and money, depends entirely upon the honesty of the individual. How lightly this obligation rests upon our people, and we are no different from our brothers in other states, is forcibly shown by comparing the returns of personal property made during the last twenty-five years. In 1873, the return of personal property for taxation in Ohio was five hundred and twenty five million, five hundred and ten thousand, seven hundred and eight dollars. This steadily decreased until it was but four hundred and eighty-five million, seven hundred and fifty thousand, one hundred and ninety-six dollars in 1881. In order to enforce, if possible, the return of intangible property, the so-called tax inquisitor laws were enacted in 1881, at first applicable to certain counties only, but finally extended to the whole state. Under these laws the county commissioners may employ individuals to search for personal property, and when discovered, place the same on the duplicate, inflicting certain severe penalties. This is done under the authority of the auditor, and the inquisitor is paid from twenty per cent to twenty-five per cent of the amount collected. The immediate effect of this law seemed beneficial, and the total return of personal property increased in 1882 to five hundred and eighteen million, two hundred and twenty-nine thousand, and ninety-seven dollars, and reached its highest point in 1893, when it was five hundred and sixty-eight million, five hundred and sixty-seven thousand, two hundred and fifty-five dollars. Since that date it has steadily decreased until in 1897 it was but five hundred and eleven million, ninety-six thousand, seven hundred and sixty-eight dollars, although during that year the tax inquisitors were working in fifty-seven of the eighty-eight counties.

We have lost since 1873 twenty-four million dollars in the valuation of personal property, and despite the rigors of the inquisitor law, which temporarily increased the returns, we have seven million dollars less of personal property for valuation than in 1882, the first year of the operation of that law. The law was an attempt to enforce a bad system by the infliction of severe penalties. It has proved not only useless, but demoralizing. Demoralizing, because it has produced contempt for the law and put a premium upon dishonesty. The high rates of taxation in most localities resulting from a failure to increase the valuation, have made an honest return of intangible property practically impossible. For instance, if the tax rate be three per cent, as it is in many places, the return of money or intangible property at its market value, at the present time when the average interest earnings are about four per cent, would mean practical confiscation of the earning power of that property. Hence, estates which are in the hands of the executors and guardians and the few individuals whose consciences compel them to obey the law, bear excessively unjust proportions of the burden of taxation. The average man declines to make the return, and is willing to take the chance of successfully evading the inquisitor or settling with him for an amount much less than the tax would be, or he leaves the state and withdraws all his personal property from the duplicate.

Again, the amount of money obtained by the inquisitor is out of all proportion to the value of the service rendered. Since the operation of the law under which they act, the inquisitors have been paid over one million dollars, making this the most lucrative official business in the state, and for which business the state has suffered rather than benefited. The practical effect of the law has been to drive away millions of property which otherwise would have been returned for at least a partial valuation. The inquisitors have successfully prevented its repeal by deceiving the people with the statements that they are bringing the "tax dodger" to justice. While, in fact, the real reason for the inquisitor's anxiety to prevent a repeal is that he is obtaining an enormous return for little work, and with no investment of capital. The system is bad; the remedy has proved worse, and the sooner we abandon the effort to tax by the present method intangible property, the better we will be both financially and morally.

We should have no sympathy for the "tax dodger"; that citizen who would make his neighbor pay for the protection of his life and property. But let us bring him to justice by sensible methods, not by a method which enriches the inquisitor, brings discredit to the law, and a decreased valuation of property.

Turn now to the valuation of real estate, and we find another serious fault. The value of land being fixed by the local assessors is approximately made on the same basis throughout a special county. No concealment is possible, the amount of the valuation rests entirely upon the judgment of the assessors, and ordinarily, the burden of the tax is equitably borne. This applies to all local taxes. But when the state tax is considered we find great inequality. The real estate of other counties is valued on a different basis, the assessors of each county having no knowledge of the basis adopted by assessors in other counties. The State Board of Equalization is supposed to equalize such inequality; but an investigation of the acts of the boards shows that no real equalization is made. It is idle to suppose that thirty-three men, elected from the different senatorial districts, in but a comparatively few meetings can properly perform the enormous task of adjusting real estate values for the entire state. The results have been most unsatisfactory, leaving gross inequalities in valuation. As the state tax rate is imposed uniformly, those counties, where valuations are reasonable or high, are forced to bear an unfair proportion of tax. The natural result follows. The tax payers of each county elect assessors to reduce their land values to the lowest possible level. And so again we suffer from a too low valuation. During the last twenty-five years there has been an increase of but twenty per cent in the total real estate valuation of the state. Thus, during this period of twenty-five years when, as we know, we have increased enormously in population and wealth, there has been a steady decrease in the valuation of personal property and but a slight increase in the valuation of real estate, resulting in manifest injustice to the land owner, and a generally unfair division of the tax burdens.

By reason of the failure to obtain increased valuations, the state has sought revenue from other sources, such as the tax upon intoxicating liquors which now produces nearly three and one-half million dollars per year and is divided between the state, county and municipal funds; the excise tax upon corporations amounting to about five hundred thousand dollars a year; and fees upon insurance and other corporations amounting to about one hundred and sixty thousand dollars per year; while the counties and municipalities have adopted license fees, franchise and special taxes to increase their revenues.

This, in outline, is our system. The various makeshifts adopted to squeeze more revenue from every imaginable source have proved its weakness. However, the causes of present evils are by no means alone attributable to the faults of the tax system. Hand in hand with that system has been extravagance and waste in local public expenditure, accompanied in some places with corruption, resulting in enormous indebtedness and ruinously high tax rates. The state debt has been gradually reduced and state appropriations not unduly increased, considering the growing needs of this great state, but the local indebtedness has gone far beyond the bounds of reason. Twenty-five years ago the total indebtendess of the political divisions other than the state was less than seventeen and one-half million dollars. In 1897 it was ninety-four million, seven hundred and twenty-seven thousand, two hundred and fifty-six dollars, an increase of over seventy-seven million dollars. And the startling feature of this increase is that nearly one-half of it has been made since 1890. The increase since 1890 has been directly caused by the most vicious kind of special legislation ever foisted upon the people of this state, viz. special bond laws which took from the people of a given locality the right to vote upon the question of issuing bonds, leaving that question in the hands of the public officials who were too often the very men who advocated the measure before the Legislature. The ease with which money was thus put into the public treasuries produced extravagance, waste and in many cases dishonesty in the expenditure of the public funds. To meet these increased burdens higher tax rates were necessary because the valuations, as I have shown, did not proportionately increase. In some counties the tax rate has even gone above five per cent. Fortunately, in our county, no such extreme conditions exist, but we are obliged to suffer the extra burdens placed upon us by reason of the undervaluations in other counties.

Under these conditions it is not surprising that tax payers are crying out against the existing condition of things. It is to be wondered at that they have so long been indifferent to the corrections of the evils. The agricultural communities are suffering the most because in great part their property cannot be concealed, and hence is ordinarily returned at a fair valuation. Then, again, in similar communities, more personal property is proportionately returned than in the large cities because the people are better acquainted and know approximately each other's wealth, and would quickly discover any grossly false return.

We cannot hope for an immediate remedy of all the evils, for probably a constitutional amendment will be required to effect some of the needed changes; but by concerted intelligent effort the people can compel their representatives and officials to accomplish much toward the desired end.

I offer for your consideration a few suggestions as to what can be done.

First: Secure local option in taxation by abandoning the state tax rate. This can be accomplished by extending the excise tax, now levied only upon quasi-public corporations, to industrial corporations, increasing the amount of the tax and proportionately relieving those corporations from local taxes except upon real estate or tangible personal property. The moment the state rate is abandoned the need of a state board of equalization vanishes, and each county is left a tax unit, so far as valuation is considered, entirely independent of other counties. If its people see fit to place through their assessors a low valuation, they alone must suffer by reason of the high tax rate. But above all, this would be beneficial by increasing the responsibility of the tax payer for the financial condition of his locality. It brings the question directly to him. He could not then shift it to the Legislature, where, of necessity, local conditions and needs cannot be thoroughly investigated and understood.

Second: Abandon the effort to tax in the hand of the individual intangible property such as stocks, bonds, notes and moneys. Probably a constitutional amendment is necessary for the full accomplishment of this, but it can be approximated by the extension of the excise tax upon corporations, both domestic and foreign, quasi-public and private. The excise tax is, in fact, a tax upon the business, and when we properly tax the business, we tax the stock, the bonds, notes and the money used in the transaction of the business. By this we also would avoid the present injustice of double taxation. What logic is there in taxing the certificates of stock that the individual holds in a corporation of another state? We might as well tax the deeds that the citizens of Ohio may hold as evidencing their ownership of land in other states. The corporate property, the ownership of which is evidenced by the stock, bears its burden of taxation in the place where the corporation exists; and yet, by our law, we attempt to again tax that property as represented by the stock.

Third: Stop the enactment of all special laws by the Legislature authorizing either the increase of local tax rates or the imposition of local indebtedness. The general laws are broad enough to meet every possible need of either the county, township, municipality or school district. Under the general law the increase of the tax rate beyond the statutory limit or the imposition of bonds cannot be made except by a vote of the people within the district to be affected. In some instances a two-thirds majority is required. This safeguard should not be thrown down by legislative action. A study of the special acts of the Legislature during the last eight years shows that the sole purpose of special legislation has been to take away from the people this right of voting upon such propositions. The correction of this abuse alone will save to the people of our state hundreds of thousands of dollars annually.

Fourth: Relieve the owners of real estate which is honestly mortgaged by a provision similar to that prevailing in Massachusetts, under which the mortgagor shall be assessed only for the value of the real estate after deducting the assessed value of all the mortgagee's interest in such real estate. By such a law two results would be accomplished: First, the honest owner of mortgaged real estate would be relieved; and secondly, the owner of the mortgage, which in most cases now escapes taxation, would pay his proper proportion of the tax.

Fifth: Extend the scope of the inheritance taxes. This should be done simply as a temporary expedient until a general change of the laws relating to intangible property is made. If property bears its fair portion of taxation during the life of the owner, it should not be subjected to a further tax simply because of the accident of death; if it has fraudulently escaped during the owner's life it can at his death be readily taxed, without the aid of an inquisitor, as the inventory is by law returned to the auditor for inspection and correction. The tax should all go to the state at large rather than to the local divisions, for the local divisions would have received the ordinary taxes during the life of the deceased or on additions made by the auditor. This would be in harmony with the theory of the law, for the state, through the administration laws, protects legatees and distributees in the enjoyment of the property they may receive and hence is entitled to compensation.

Sixth: Reduce the number of taxing powers by doing away with the special boards of taxation within municipalities, giving to the legislative body of the municipality alone the power to levy taxes. Stop the creation of special school districts. This has been one of the chief causes for the increase of the school rates and indebtedness, particularly in cases where the special district has been created by a special act of the Legislature rather than under the general law. By thus cutting down the number of divisions vested with taxing power the possibility of undue increase of the tax rate is materially lessened.

Seventh: Obtain from the quasi-public corporations which enjoy local franchises a proper compensation for the value of the franchises. The state properly taxes corporations a fee for granting them the right to exist as corporations or to do business in this state; it then properly taxes them under the excise law for the amount of business which they do; but the real value of street railroads, gas companies, water companies, telephone and electric light companies and similar enterprises depends almost entirely upon the right to do business within the community where it operates: hence that community should obtain a fair return for granting this valuable right. This should be obtained either by a percentage of the gross earnings or by gradual reductions in the charge made for the service rendered in accordance with the increased earnings of the corporation.

Eighth: Guard most strictly public expenditures. No community should be niggardly or parsimonious in making appropriations for necessary public improvements; but such improvements, when made, should be conducted in accordance with the strictest business methods. For a moment, consider the waste of public money that has been permitted on road work during many years past. The people of our county have spent thousands of dollars on road work, but in fact the roads are no better as a whole today than they were twenty years ago. The difficulty has been in the lack of a uniform system and systematic work. If each road district had used the amount of money raised in constructing a section of a road thoroughly well each year, we would today have something to show for the expenditures. But the opposite system has been pursued. We attempted to cover too much ground, and necessarily did incomplete work. Road work is but a single example. Statistics for the last twenty years show the need of more careful expenditure in all departments.

No matter how wisely our taxes are levied and collected, if the expenditure is unwise, evil results.

Lastly, the personality of the officials and representatives chosen by the people should be most carefully scrutinized. The men who are to control the finances of our communities should possess those qualifications which are necessary for success in the ordinary business of life, knowledge of the duties to be performed, ability and scrupulous integrity.

I offer these suggestions, without attempting to elaborate any of them, for the purpose of exciting, if possible, a live interest in this subject. No community possesses a higher average of intelligence, honesty and good citizenship than our own. If we permit a continuance of present conditions, we can properly blame only ourselves.

THE FARMER'S RELATION TO EDUCATION.

By Prof. Homer J. Hartzell, Piketon, O.

[Read at the Farmers' Institute held at Piketon, Pike County, January 20 and 21, 1899.]

The importance of the farmer as a member of our economic fabric has long been recognized. Holmes says of the plowman and the newly plowed field,

"These are the hands whose sturdy labor brings
The peasants food, the golden pomp of kings;
This is the page whose letters shall be seen
Changed by the sun to words of living green;
This is the scholar whose immortal pen
Spells the first lesson hunger taught to men;
These are the lines which heaven-commanded toil
Shows on his deed — the charter of the soil."

But not only in the industrial field is the importance of the farmer felt. The farm is largely the source from which the nation draws its stock of brains. Our history from the earliest time is full of great men whose youth was spent on the farm. Occasionally a Wanamaker arises to be a notable exception to the rule. History teaches us that the condition of the agricultural class is a good index of the nation's greatness. In proportion as the farming class is intelligent and free, in so much is the nation free and prosperous. It redounds to the glory of our country that the farmers have been leaders in thought and education, that the farmers have been at the front in the settlement of every great and difficult question. In order that they may continue so, it is essential that their interest in matters educational should in no wise abate.

Lyman Beecher, forty years ago, said, "We must educate! we must educate! or we must perish by our own prosperity. If we do not short will be our race from the cradle to the grave. If in our haste to be rich and mighty, we outrun our literary and religious institutions, they will never overtake us; or only come up after the battle of liberty is fought and lost, as spoils to grace the victory and as resources of inexorable despotism for the perpetuity of our bondage."

If this was true forty years ago, it is doubly true today. Education will largely insure our longevity as a nation. And now on the threshold of another century, when a new national policy, radical and far-reaching in its effects, seems about to be adopted, the necessity for an education is greater than ever before. We point with pride to many men who in the past have attained prominence with training in the three R's merely. But conditions have become more complex and competition has become more severe. The time is past when a young man could read law for a few weeks and soon spring to prominence at the bar or get a seat in congress. The time is past when a young man after a short course of study could secure a college professorship. The time is past when a young man could study theology for a few months and become a church bishop. Such results come only after the most careful labor and the most persistent painstaking preparation.

There are in Ohio today probably more college graduates in proportion to the population than there were high school graduates forty years ago. This simply means that in the race for life the college graduate today has no more chance than the high school graduate forty years ago. Likewise the high school graduate now has no more opportunity than one with a few months training in the three R's then.

While the needs for an education are great it can well be said that we are educating. The growth of schools and colleges and the increased attendance in the last twenty years has been little short of marvelous. In every state new colleges are being founded and old ones better equipped and better endowed, and the increase in attendance more than keeps pace with the founding of schools. In the past twenty years the increase of post-graduate students in the United States has been from two hundred to five thousand, an increase of twenty-five fold.

There are in Ohio about forty regular colleges, and including academies, normal schools and professional schools the number becomes a little more than a hundred. In these schools ranking higher than high schools there are gathered together approximately thirty thousand young people. Be it said to the glory of Ohio, that this is a greater number than any other state in the Union furnishes. In a recent canvas of an Ohio college it was found that of the five hundred young men in attendance, fully three-fourths were from the farm. While this may not be the case and doubtless is not true of all Ohio colleges, it gives some indication what the farmers of Ohio are contributing in the line of higher education.

Although the farmers' money is spent freely and in general cheerfully in support of our educational system and although the farmers furnish more than their proportionate share of the students for colleges, yet a brief survey reveals the fact that our school system is weakest where it comes most directly into contact with the farmer. While the fields of higher education have broadened largely, while the opportunities for advanced culture have become many, the farmer's school — the district school — has made but little progress in thirty years.

We declare that all men are created free and equal and in many respects treat them as if the equality ends at creation. This is certainly true of our school system for no one acquainted with the facts will affirm an equality between the public school privileges enjoyed by the four hundred thousand farmers' children of Ohio and the children residing in our towns and cities. Farmers have not been slow to make progress in other lines. They have adopted new methods and new machinery. Why should they be satisfied with educational methods in vogue thirty years ago? The weakness is not in the district school teachers particularly for they have in general done well under the circumstances, but the fault is rather in the system. The district schools fulfilled their purpose well under primitive conditions but as conducted at present they are not well adapted to the needs of the times. The blame largely must be laid at the hands of the farmer. When the farmers demand a more effective school system and are willing to work for it, they will get it. Educators may recommend means of improvement, but before these can be effective the farmers must adopt them.

But what methods shall we pursue in improving our country schools? Consolidation has been proposed. By this we mean conveying the pupils from sparsely settled districts or from an entire township to some central school, the cost of this being paid out of the school funds, the conveyance covering a certain route morning and evening. This method gives the pupils the advantage of a graded school and a high school at an expense in some cases less than at present. This method however is radical, involving the abandonment of present school properties and will not be considered here.

I quote from the Committee of Twelve appointed by the National Educational Association some years since to consider means of improving our rural schools, "There is no other agency in our school system that has done so much for the improvement of our schools in organization, and in methods of instruction and discipline as the superintendency." One educator says the difference in the effectiveness of the country school and the city school is largely one of organization. I believe that township high schools and township supervision would increase the efficiency of our rural schools one hundred per cent. As at present administered our district schools are very much disorganized. Each school district is almost entirely independent of every other. A very good teacher succeeds in keeping a fairly good school, while with a poor teacher the result is decidedly unsatisfactory. A good school at present is a chance occurrence and not a result of the system. Imagine a city school whose teachers are entirely independent of each other, and it will be seen at once that a school system as such would be impossible. We speak of our rural schools as constituting a system when almost the first principles of system are lacking.

The benefits of supervision are apparent; it makes the teachers responsible to some one for their work; the teacher knows that the eye of one competent to judge is upon him, ready to approve or disapprove of his work, and consequently it proves a great stimulus to a teacher to do good work. The superintendent above all others is able to judge the ability of a teacher from the standpoint of the school and so can recommend the best teachers to the board; as a matter of fact the most competent teachers are attracted to those townships having the superintendency. This plan puts the responsibility for the success of the schools in the hands of one man who is answerable to the Board of Education. A single headship is largely the secret of success in school work as in business. In addition to uniformity in course of study, in grading and in examination, it makes concerted action possible among all the schools of a township, leading to the establishment of libraries, reading courses and the furnishing of good literature to the pupils.

Township high schools likewise add much to the effectiveness of the system. The critical time in the education of a child is from twelve to fifteen. Before that time the child in confidence in parent and teacher, is willing to submit himself to the routine of school work. At about the period indicated the pupil must be held by interest in the studies themselves if he is to be kept in school. Our district schools furnish but little inducement in the line of advanced study, hence after following the same books and studies for a few years, it is not unnatural that the pupil's interest should abate and that he should drop out of school. With a township high school there is constantly before the pupil new studies and advanced work to be mastered which stand forth as a challenge to his energy and ambition until he has mastered them. A high school would probably be as valuable as an inspiration to the pupils of a township as it would for the additional knowledge it makes it possible for them to acquire. Further the high school represents a distinct and higher step in education than is represented in the district school. In the first years of a child's life teachers must be content to teach unrelated bits of knowledge, must teach facts for their own sake, until the pupil's mind becomes strong enough to grasp the relations between the various phases of knowledge. The object of a high school course is, as far as possible, to present the various branches in their relation to each other and by so doing, to show the ultimate unity of all knowledge. It is practically impossible for this step to take place in the district school.

The collection of a few of the advanced pupils in a township high school not only gives them better opportunities but aids the primary pupils who are left in the district schools. In a school of thirty-five pupils, a half dozen advanced pupils will consume probably thirty per cent. of the teacher's time, and if this grade were removed the immense advantage to the remaining pupils will at once be seen. If the cost of tuition of the advanced pupils be computed at this rate it will likewise be seen that they can be taught in a high school both more effectively and more cheaply.

Of course township supervision and a township high school presupposes a competent man at the head. Where this system has been tried and declared a failure or ineffective, it is because this condition has not been filled. The ordinary district school teacher is in no wise fitted for the work. The head of the township schools should be a professional school man, of good scholarship and special preparation for the work. He should be in touch with current educational thought and above all he should be a man of the highest moral and Christian character. The influence of such a man as an inspiration to the youth of a township and as an example to be followed can not be lightly estimated.

There is at present a great movement for higher education. The Methodist Church has pledged itself to raise a fund of twenty million dollars, much of which shall go to endow higher institutions of learning, and one Ohio conference has agreed to add one million dollars to the endowment of one of our colleges. Although the enterprise is a worthy one, I believe a million dollars spent in inaugurating the system of rural education indicated, would be ten times as effective for good and eventually send many more young people to college.

Farmers, the question is yours for settlement. Our country schools must be improved, and great will be your responsibility and great will be your loss if the proper solution is not given.

THE FARMERS' INSTITUTE.

By S. H. Bigger, Ada, O.

[Read at the Farmers' Institute held at Ada, Hardin County, January 4 and 5, 1899.]

To what extent is the Farmers' Institute beneficial to the farming community?

The extent to which benefit is derived is so great that pages upon pages might be written and yet half not be told. From the world's foundation to the present time, system is the basis upon which every successful enterprise is based. Following a system supported by good reasoning power, success is assured; without it, it is failure.

Merchants and professional men of every class have their schools of training to prepare them for their work. The farmer at the present time is not an exception to the rule. In 1889 we, as farmers, were recognized by the National Government, when the Bureau of Agriculture was elevated to the rank of a Department and its chief made a cabinet officer. Jeremiah Rusk, of Wisconsin, had the honor of being the first to hold that position, in Harrison's administration.

There was a time when it was thought that when a person could do nothing else he could farm. Mistaken idea! Skill and judgment are required on a farm.

as well as in any other vocation of life. Another mistaken idea in regard to farmers as a class is this: they are regarded as ignorant in the extreme. I have often heard this remark made by one individual to another, who wished to floor him, so to speak, with a single argument, and humiliate him at the same time as much as possible, "Why that is bad enough for some old farmer," and that same individual could not intelligently tell, perhaps, the difference between a Jersey cow and a Jersey hog.

The Farmers' Institute is the farmers' friend and the extent to which we are benefited depends upon the application we make of the information gained. Practice what we are taught by our instructors who understand their subjects in a practical way and the results may be seen on our farms.

Four years ago one of our institute lecturers gave the following information as to raising or producing clover seed; he said: "Pasture the field till June 1, then run over the field with mowing machine, go over it with hay rake and haul off the grass where it was too heavy on the ground, then turn all your stock — horses, cattle, sheep and hogs — on the field and in ten days turn them off, run over it again with your machine and by so doing you destroy, perhaps, the second time, the insect that is making its way up the stalk to destroy the blossom on the clover head when it makes its appearance." That same year I carried out his instructions to the letter on thirteen acres of clover. In August I threshed the clover and had forty-three bushels of marketable seed, for which I received in the market as soon as threshed five dollars and twenty-five cents per bushel. "No difference how short the stubble appears to be, run over it the second time with the mowing machine," was the instruction and I invariably follow it.

One farmer tells me that he learned to his own profit in regard to humus in the soil. To illustrate, we may fertilize our land with the best known fertilizer, and yet the ground remain solid and apparently heavy. The humus which is much needed is decayed vegetable matter, such as a heavy growth of clover and other vegetations to loosen the soil. Last winter we had a lecture in our institute on bacteria and you all remember how interesting it was to every one present. Thus we could go on indefinitely with instances wherein great benefit is derived by attending the institutes. We receive instruction from those whose ideas are from practice and not theory alone. The Farmers' Institute is the high school of training for the farmer who will avail himself of the great privilege of attending.

How different are the ways of farming to what they were in my boyhood days! Sometimes we read a book, written in a sort of rambling way, and on the very bottom of the last page are the words in large letters, "The End," thus notifying the reader that he is through with that book. When I was a boy living in the eastern part of Ohio well do I remember the rotation of crops in farming. Cost what it would corn would be planted year after year until the crop would begin to not "pay", as it was termed; then oats would be sown, followed by wheat and sown in grass seed, and if grass failed, as it often did, the field was plowed up and sown in buckwheat; then as a last resort it was planted in beans, and whenever you saw a field planted in beans, in the words of the instructive author, the beans meant "the end." We learn from our instructors that rotation of crops is well enough to a certain extent but to use great care in determining what we shall plant or sow and to cultivate only that which is adapted to our soil.

Many years ago my idea was in regard to help on the farm that the cheapest man should be taken regardless of experience. An institute lecturer advised differently. My experience the preceding harvest made his argument very impressive. I needed an extra hand to help through harvest, came over to Ada and met a young man who was anxious to work. I asked him if he ever worked on a farm; he said "No," and with the assurance of a Napoleon replied further that he could do any work on a farm that a farmer could do; what more could I ask?

I employed him, took him home with me and after dinner our first work was to set up a reaper, a self-raker. It was stowed away in a shed in sections. We took the parts out of the shed, laid them down and proceeded to set up the machine. When we came to that part, I told the young man to put on the rakes, as I was busy at something else; after a long time he called to me and asked what he should do next? I went to where he was and found that he had the rakes on upside down. I only kept him a week, as in most of his work he could come about as near doing it the same as a farmer as he did in puttting on those rakes. Experience and good common sense are both essentials to successful farming. He who has had no experience whatever in farming would, if depending entirely on himself, meet with about as much success on the farm as he would commanding the battleship Oregon or Iowa without a military education.

From the first settlement of our country to the present time farmers have been more or less successful in farming; yet we find that different methods are in use than were followed when the soil was yet new. Experience is a costly teacher where the farmer has only a small farm to work, and at our institutes we may learn how to work our fields to the best advantage, deriving the greatest benefit therefrom and at the same time retaining the fertility of the soil. We also derive great benefit at these institutes in the lessons of handling stock, manner of caring for them, feeding in winter and how to overcome bad habits in animals given to such. Here I again draw from experience. Several years ago I had a cow that would almost invariably kick the milk bucket over when it was as full as it could be conveniently. One of my neighbors, a veritable Yankee who knew just how to handle cows, told me to take a small stick or switch and whenever the cow kicked to hit her a sharp rap over the leg and after a while it would break her of that habit. I felt grateful to the man for this advice, feeling that I would ever teach my children to have a pious regard for him. The next morning I walked into the barnyard very independently, milked a cow, then went to "Daisy," the kicking cow; I sat down, and set a small club against the milk bucket and proceed with my milking; as usual, when about done milking, she kicked one foot out, and in an instant I gave her a sharp rap on the unoccupied leg; in a moment I was in the midst of a cyclone. The cow planted one of her hind feet squarely on my breast, with the other she crumpled a new straw hat I had on my head, upset the milk bucket, left me measuring my length on the ground, while she sought retreat in the farthest corner of the barnyard. The idea may have been a good one, but I made a mistake in the application. The man who gave me the information milked his cows tied up in the stable; he didn't tell me that part of it, but I suppose he thought good judgment would teach me that it was not advisable to resort to such methods in an open barnyard. Well, I didn't after that, but it must have been experience rather than judgment.

At the Farmers' Institute we learn new lessons as to best methods in so many different kinds of work on the farm that it is of almost vital importance that we should not only attend, but as nearly as practicable carry into effect or practice what we are taught by those who fully understand the subject of farming; and in acting upon instructions received at the institute we must omit no part lest we meet with the success as related in the incident of the kicking cow.

The better methods used in farming, the greater income derived therefrom, hence the enjoyment in life will be proportionately increased; also the better methods we use enables us to have our work done in proper time, thus adding to our chance of being successful in obtaining a fair remuneration for our work and an increase in our income from the profits of the farm, which is enjoyed in various ways according to the different ideas of different individuals. Some will go on excursions to the Soldiers' Home or the meeting of the Grand Army of the Republic, and others to the Lakes of the North, to the usual places for recreation, while some shoulder their knapsacks and go hunting — all a matter of taste to the individual.

Before I close this article on benefits to be derived at farmers' institutes allow me to say a few words by way of recapitulation and suggestions added thereto.

Our views are extended as to the methods employed for certain results. The time for planting and sowing and caring for our crops in due season is discussed; the best methods of fertilizing and crops raised which are best adapted to certain soil is also discussed; the handling of small fruits and the protection from the ravages of insects, are all brought out. Then we have information in regard to stock, that which is most profitable both as to feeding and disposing of it in the markets; drainage of our land and the reasons why even uplands should be drained; the building of fences, gates and sheds for farm implements; all necessary out buildings on the farm for protection of stock and farming utensils, all go to make up a school of experience giving us more exalted ideas of life on a farm.

Last but not least we learn of the social part. While, in the main, it might sound a little romantic, yet underneath is a current carrying the truth as it is. Many of you no doubt remember that beautiful poem entitled "Around the Light at Home." Many times it is recalled to my memory as I am wending my way homeward and night overtakes me. Far and near, all over the country, far as the sight will admit, bright as the stars overhead, may be seen the lights dotted here and there in the homes of many happy families, and uncalled for will come the words: "Around the Light at Home." It matters not whether it is the light of the gilded palace, the home of a millionaire, the farmer in his humble but happy home, the laborer, whose sole fortune lies in the possession of the dear ones who make up his family circle, or the pioneer who wends his way through the trackless forest to reach his cabin wherein he may rest when he sees that welcome light, to one and all comes the thought, "Around the Light at Home." Around that light we have our joys, our sorrows; our hopes and fears alternately come and go. But after all the mainspring of activity, of mental culture can nowhere be given more freedom for its work, unbiased, unprejudiced and free from temptations than can be found in the work on the farm. Year after year young men and young women, noble in their every way, are starting out in the avenues which will eventually lead to great and glorious results. Where do they come from? We say without fear of contradiction that the majority of them are brought up on the farm, and while to the starchy individual the farmer and his family seem rude and to them uncultured, yet, after all, there are grand lives which go on brightening, broad and generous in their views, learning great lessons from nature around them, and finally opening out to usefulness and admiration as the beautiful flower buds blossom in the garden.

There is also something attractive about the farm. The boys and girls may leave the farm, rise from one station to another, occupying at last the most exalted and honorable positions and in years to come, perhaps in the evening of their lives, what would they give to hear one tap of the familiar dinner bell, rung by mother's hand, and gather around the table as of old, but as that can never be again, the attraction which the farm gave is this: it was so beautiful, so grand in every way that as long as life lasts the scenes of their childhood are held as almost sacred. General Jackson, the hero of New Orleans and once President of the United States, when on his death bed asked to be carried out on the porch. His request was granted. Then he told them to bring up a yoke of oxen that he might see them as in days of old, standing in peace and tranquility, chewing their cuds and glancing around as was their custom.

In conclusion we will say the benefits to be derived from the Farmers' Institute are so numerous that they cannot be reviewed in a short space of time, and for my own part I feel that the social part and ideas to be obtained as to progression on the farm is well worth the time spent in attending. As in former years in the log cabin, vines would clamber over the logs and cling thereto, so is the memory of our farm life often recalled to our recollection and our institute lecturers give us ideas as to beautifying our homes, as well as to meeting with financial success. We have many instances we would like to narrate as to benefits derived, but time will not permit, so using the words of another, we will have to say this is "the end."

ARE THE TEACHINGS OF FARMERS' INSTITUTES PRACTICAL FOR RENTERS AND FARMERS OF LIMITED MEANS?

BY E. B. MICHENER, Waynesville, O.

[Read at the Farmers' Institute held at Lebanon, Warren County, March 1 and 2, 1899.]

We will begin with the renter, that large, and I am sorry to say increasing class, for I believe it would be better for our people and our country, if most farms were occupied by their owners. First let us consider the relations of owner and tenant. Whatever the terms of contract, whether crop or money rent, owner and tenant are real partners, and should each labor for the benefit of both. We are all selfish by nature, but–selfishness carried too far defeats itself. In this matter it will pay both parties to practice the golden rule more, and the take–all–you–can–get policy less. The owner should offer terms that are reasonable and in accordance with present prices of farm products, and the present condition of the farm, rather than a certain percentage on the price of the farm years ago when all prices were higher.

The tenant will find that it will pay to be so honest, so fair, so careful of the property of which he has temporary possession, so thorough in the cultivation and so prompt in the gathering of his crops; in short, to make himself so desirable as a tenant, that it will be easy to secure the best farms and the best terms. Then he should seek a place at the first opportunity that can be rented for a long term of years. He will then be ready to put in practice some things that are taught at farmers' institutes. Certainly the poor man is the one most in need of help.

T. B. Terry once said that none but a rich man could afford to raise weeds or burn green wood. Our institutes teach that there are a good many things a poor man cannot afford to do. He cannot afford to farm land that will produce only half a crop, especially if he has to give half of what he raises to the owner of the land. He cannot afford to farm over or around wet places, large or small, with little or no return, and which if tiled would be the most productive soil. He cannot afford to shelter his stock on the leeward side of a barbed–wire fence, keeping them warm with thirty cent corn and then find them lighter in spring than they were in the previous fall, when with warm sheds he could keep them thriving with half the feed. He cannot afford to allow his milk cows to use their butter fat to warm the air of open yards or breezy stables. He cannot afford to board cows for one hundred and fifty pounds of butter or less per year, when with better cows the same feed and care would yield him three hundred pounds. He cannot afford to raise scrub cattle, neither good for dairy or beef when it is almost as easy to raise a prime beef that will always be in demand at the top price and bring a profit to the feeder. He cannot afford to buy high priced nitrogenous fertilizers, while he feeds his hogs on a hillside back of the barn, his sheep and cattle in the wood lot, and throws the manure from his horse stables in heaps under the eaves, where most of the fertility that is not lost by over-heating will be washed away when it rains. All these things and many more are taught at our farmers' institutes. But what can the renter put in practice? If he has a clay farm where the use of commercial fertilizers produces paying results, he can buy phosphoric acid in plain acid phosphate, which is the cheapest kind of fertilizer, and get his nitrogen by making and saving more manure, and by growing clover which steals nitrogen from the air and hides it in the soil for our use, while it makes the best and cheapest feed to balance our carbonaceous corn and fodder.

But how about the tile drains and the warm stables? I will quote the old adage slightly changed, "Where there is a will there will be found a way." If the tenant is such as I have described, and the owner is at all reasonable some arrangements can be made by which the needed improvements can be obtained. If the owner gets a share of the produce, he will be equally interested in whatever increases the yield, while the tenant can afford to do the work cheaper, or do some of it gratis if he is likely to have the use of the land for several years. Each year a few of the wettest places may be drained and as both parties see the benefits that follow they will be glad to coöperate in further work of this kind.

If stables are scarce very comfortable shelters can be cheaply made with poles and rails, covered on top and three sides with straw at threshing time. If the stables are cold they can be lined with building paper at trifling cost. Two or three dollars will buy enough paper to line a large stable, and the farmer and his boy can put it on in a few hours. On many farms there are enough old boards lying around in unsightly piles or scattered on the ground to line a good sized stable. These can be nailed on inside of posts and ties and the space between them and the outside weatherboarding packed with short chaffy straw. (We used clover chaff.) Thus with small expense stables may easily be made so warm that, when the mercury is hovering about zero, and your neighbors' cattle have drawn their spinal columns into a shape resembling that of the rainbow, it is a real luxury to enter your stable, take off your big coat, feed and care for the stock, milk the cows, and even sit down and watch the lambs play. If you keep the wind out the animals will warm the stables. For each sheep is a little stove and each well-fed cow or steer a small furnace.

If there are no partitions in your cow stable, so much the better; you do not need them there any more than in your sheep house. Dehorn the cattle, tie them while they eat their grain, and leave them loose the balance of the time, to walk about or lie down when and where they choose. They will be comfortable and contented, and will keep clean, provided they are given plenty of bedding. In zero weather keep them in all day and bed morning and evening before milking. The cornstalks from the mangers will be crushed, broken and moistened until they are but little in the way. The liquid manure, which is worth about twice as much per ton as the solid excrement, will be nearly all absorbed by the straw and stalks, even on an earth floor, and packed in safe keeping until a suitable time comes once in three or four weeks to haul it direct to the field and spread it from the wagon on the grass or clover sod that you intend to plow in spring for corn or potatoes. The next fall you will probably be able to gather seventy-five or eighty bushels of corn per acre, while your neighbor, who does not think he can practice what is taught at farmers' institutes, only gets thirty bushels. Then sow wheat on this manured corn ground the first of October in this latitude, and follow with clover.

The man who nominally owns his farm, but has it covered with a big mortgage, may think he cannot afford to purchase good cows for his dairy, but he would better keep one cow that will yield him four or five dollars per month all winter, more than the cost of her feed, than to winter two that do not pay for their board, while he does the milking for the fun of it, though it may take the price of the two poor ones to pay for the good one. He does not need to buy thoroughbreds, many of the best cows are grades. Get a few of the best he can procure, then always use the best thoroughbred sire in reach and save the heifer calves. Or, buy week-old calves from some of the best cows in the vicinity. These can often be secured at very reasonable prices, of dairymen who have a surplus.

To illustrate, we have two cows that were purchased when heifers, and which were both fresh on the 12th of September. We set and skim the milk the old-fashioned way and churn at home. We did not churn all their milk through October, but during the four months from November 1 to February 28 we have churned three hundred and eight pounds and thirteen ounces of butter, or an average of thirty-eight and one-half pounds per month for each cow, besides the new milk and cream used in the family. We feed about six pounds of corn meal and six pounds of wheat bran to each cow per day, with what clover hay and corn-fodder they will eat clean, fed alternately, and in addition a few roots or pumpkins. If we count the rough feed equal to two tons of clover hay for each cow six months, worth ten dollars, the bran at twelve dollars per ton, and corn meal at thirty cents for forty-eight pounds (they were not worth these prices last fall), we find the cost of the dry feed to be three dollars and eighty-seven cents per month for each cow. The butter was engaged at eighteen cents, which is not a high price. Then we have:

Thirty-eight and one-half pounds at 18 cents	$6 93
Cream used from each cow	40
Skim milk at 1 cent per gallon	60
One and one-half loads manure	75
Total	$8 68
Deduct feed	3 87
We have	$4 81

per month from each cow to pay for labor, roots, pumpkins, etc. This is not an extra large yield, but I give the figures to show what any one may do with the most common facilities ,and to show that there is a profit in keeping good cows.

A COMFORTABLE HOME.

By Edna Green, Raymond, O.

[Read at the Farmers' Institute held at Marysville, Union County, February 6 and 7, 1899.]

It has been said, and with a degree of truth, I take it, that "Fools build houses, and wise men live in them."

However costly our mistakes in the matter of house-building, I am sure there is many a woman, weary with managing house-keeping in an ill-planned house, who would willingly bear the stigma of foolishness if she might be able to build as her inmost soul desires, and by so doing have what would be, to her at least, a model house. Too often a country house of the common, modest sort is built with no apparent thought of the comfort or pleasure of her who must keep it, and it is common to find a badly planned kitchen where, if she does her own housework, the home-maker must spend a majority of her waking hours, no matter how well she plans her work or how quickly she accomplishes it. A good, well-fitted kitchen goes far toward making the home a pleasant place, as the better it be, in the better condition mentally and physically are the people whose duties lie in that domain, and in consequence all the better will the work be done. The kitchen should and can be well lighted and well ventilated, and immediately adjoining the dining-room. Not necessarily a large room, it should have in or near it a good water supply, and in summer in or near it a good refrigerator. For years in my home we have looked upon our refrigerators as the greatest factors which go to make our hot summers, with their coincident heavy work, bearable. One or two summers, by losing our own ice from one cause or another, and being far from an adequate supply, we have keenly felt the difference between having ice and going through a summer with out it. It is so easily procured and cared for, is so great a labor-saver, and goes so materially to make a country home comfortable in the summer, it is a constant wonder to me that comparatively few farmers use it.

Frequently we find a house-keeper herself concurring in that most uncomfortable arrangement of putting the kitchen farthest to the rear of the house, when the only fine view has its outlook from the front. In such a case the kitchen should be put at or partly at the side. I shall never as long as I live, and perhaps longer (who can say) forget a bit of wooded hillside directly above a distant creek, which I can see as I stand washing dishes at our kitchen table. It comes to my eye as I look across an enchanting half-mile or so of intervening orchard, upland pasture and cornfield, and it has helped me over many a tired hour. It has one aspect in summer and another in winter, but is always beautiful, and I think I never could have enjoyed that little view so much, had I not been able to see it so many times from my work table. From this same window we get all the wonderful winter sunsets; though in summer they are too far north (but at sunset in summer our work is usually finished and we at liberty to be out of doors to see them). All this beauty would be lost to us women folk if our kitchen did not project past the width of the house, and only the front rooms and front porch would have these pleasant prospects.

Too much stress cannot be placed upon good, wholesome cookery. So again I say the better fitted and better situated the kitchen, in the better condition mentally and physically will be the ones whose duties lie in that domain, and the better will their work be done. On the work done in the kitchen hangs the fate of so many of us; whether we shall be healthy, happy, useful people, and make this world with all its sorrow and burden a little better for being a part of it, because we are strong and well from a well-cooked, wisely selected diet, or whether we shall be miserable, selfish, repining mortals who give pleasure or help to no one and whose only real trouble is dyspepsia! The keenest brain will in time be weakened, as many are daily, by miserably cooked and badly selected foods; and the cheeriest dispositions and happiest minds will grow gloomy and ill-tempered from the same cause. Also the cooks in our farm homes are so often our own mothers, sisters or wives, and their health and happiness should be precious to us; thus there is a double reason for our farm house kitchens to be as well situated and finely appointed as we can have them.

If the house-keeper has no liking for cooking it really seems as if she should cultivate one, for even if she be so situated that she need not do the family cooking, she can never know when she may have to do so, and what miseries will she then encounter, if she cannot cook well, or does not care to learn! Well-cooked and well-served meals take time, strength and thought, and it takes training to be able to manage them. So to me it is imperative that nothing should have more careful attention than the family's food, if we are aiming to make ours a comfortable home.

Neatness in caring for our home is another factor in its comfort. But do not be neat to the sacrifice of comfort. If our sons and brothers see us worrying over any trifling disorder they may make they are not to be blamed if they leave us in peace and go to questionable places for pleasure, where they find nothing but the most cordial welcome, and where seeds may be sown for many unhappy days and broken hearts.

Many a tired, half-sick mother knows how difficult it is to keep her home in as neat a condition as she would have it, and she knows, too, that system and regularity, and keeping everlastingly at it must rule her actions. At the best, granted it be a labor of love and patience and done with the cheerful help of her daughters, a farmer's wife has a busy life, and all and frequently more work than she can possibly do. "For the comfort of others the many, many little things must be done," said a conscientious, hard-working, intelligent farmer's wife to me once, when regretting her little time for reading. This friend of mine almost never has any help, so she manages her housework alone. But, I do assure you, she makes her home an ideal one. A home you love to visit, because your welcome is so sincere and cordial. Though in this home the strictest economy must prevail, yet reason, common sense and refinement in one little woman make it the happiest and most comfortable of abiding places.

Further, a comfortable home means a well-ventilated and, in winter, a well-warmed home. Not a receptacle of all the odors from every article of food cooked during the past week, nor a habitation (it is nothing more) either furiously hot from the big, over-filled stoves, or uncomfortably cool from inattention to the fires for a little while, but a dwelling as refreshing to enter on a cold day in mid-winter as on a breezy, sunny, fragrant day in June, when the house being open is redolent of the pure air God means us to use both winter and summer.

Farmers are beginning to find out that city people need not monopolize the comfort and utility of the furnace, and it is no longer rare to find one in a farm house, thanks to its owner's enterprise and thoughtfulness for his family's comfort. The farm house seems especially well adapted to this mode of heating, as it usually has a cellar and, being generally of moderate size, can easily be heated by a furnace and as cheaply as by stoves.

Another comfort, which perhaps is more of a luxury than a comfort, but which it has been suggested I mention here, is the telephone. It certainly is a great convenience and pleasure to the farm house, but until the cost is less it can hardly be considered as a comfort the average farmer can afford. It is too expensive, as so many other things are, which we patiently do without. An acquaintance, a farmer, tells me that with their telephone his wife can speak with people at five hundred different points. She is a happy woman, not only to be so fortunate in having such a fine telephone privilege in her farm home, but also in having a husband who prizes this privilege chiefly because it gives her convenience and pleasure.

As I am speaking of a farmer's home, I am almost of necessity speaking of one which must be conducted with economy, but with the same amount of money or even less than may be expended on articles of furniture and adornment of the gaudy, flashy, cheaply ornate sort, things of quieter taste may be procured and the effect be infinitely more pleasing. One really good etching, or a photograph taken in one of the many different processes in use nowadays, is better than a wall full of flashy prints or lurid chromos. In fact, nothing at all is better than the latter monstrosity. And books; let there be books. Books without stint and with no thought but of the library being always increasing. See to it that there is no trash among the books, but with an ever-growing sympathy with the bright, fresh, wholesome, untrammeled thought of the world, past and present, buy a good book whenerer it can possibly be afforded. And it can be afforded oftener than many think. If this man did not spend so much money on tobacco, or that young person on candy and chewing gum, he could save enough in a remarkably short time for another treasure for the book shelf. A few well-selected magazines are or should be indispensable. The daughters would better wear their last year's hats, if in that way they can save enough money to get at least three or four magazines. Nowadays there are firms offering us means, by which our books and magazines can be procured at very good discounts, and such opportunities should never be neglected. Personally I cannot think a home quite a comfortable one which does not have one good, thoroughly high grade, religious periodical, one or more of a number of the more popular current magazines, such as Harpers', Scribner's, Century, McClure's or Munsey, and one magazine of general review. In my home we are all devoted to The American Monthly Review of Reviews, but this is a matter of taste, as there are several of its kind really good. There is absolutely nothing that can be brought into a home to keep it bright, wholesome and happy in spirit and make us realize the refuge it is more than good books and good periodicals. And next to this is good music. If there be a child who has a talent for music, it is a distinct loss to him to be deprived of all the training in that direction his parents may be able to give him. Even the child with no especial talent for it will always be grateful for his drill in music and glad he is that much more in touch with the great world when he goes out to meet it. The pleasure he may give his family with his knowledge of some good musical instrument or the use of that most wonderful of musical instruments, his own voice, goes a long way towards making a home happy.

I desire to say a word concerning the need for occasional solitude for each individual in the home. The luxury, for it is a luxury, of each member having a room of his own, where he keeps his most congenial books and especial belongings, where at any time he may retire and be alone. Search our minds and we shall most of us who are thoughtful people find our best thoughts and highest inspirations come to us when we are quite alone and without thought of interruption.

I quote from Professor Amos R. Wells, now editor of the Christian Endeavor World, in a recent article in that paper: "There is none too much in any family of true sociability — not enough of it, in fact, in most families; and yet in few households, if any, is adequate provision made for the natural desire occasionally to be alone — absolutely alone — free from interruption by the dearest person on earth. Alone for a definite period, not with the certainty that the door will be opened in two minutes or five or ten. * * * For solitude is so precious a thing and so rare. It is only in solitude that we can truly learn to know ourselves or our God. It is only in solitude that we can make adequate review of our lives; only in solitude that we can see how we stand with relation to each other." Briefly he then speaks of the close association with others coincident with the work of most lives, and how the average house is so built that quiet and privacy are next to impossible, and that we so seldom have a bit of solitude that when we get it we know not how to use it.

He then suggests the plan of having a withdrawing-room, to be used in common by each member of the family at stated periods or when it is desired; and when the door is shut the privacy of the occupant is not to be broken in upon for a less important matter than a fire. A little planning and unselfishness and respect for each other's desire for the best things in life will accomplish this, though of course it can never equal the plan of each having a room of his own, but with the latter not possible the former arrangement may become so. Further Professor Wells says: "The desire for solitude implies no lack of love or friendliness, and it does not mean moroseness or moodiness. Its value may not be appreciated by the thoughtless or the trivial, but even they should be willing to acknowledge the importance to people who think and have a care for the great ends of life, of some season, however brief, that is not at the mercy of gossip and household routine."

Rarely can we all be suited exactly with the plan of the house we must live in, but always we can make the most of every arrangement, and use our wits and energy to make it a fit and comfortable and homelike abode for the family. When every member works together for this, behold, in the midst of this busy, restless, troubled world of ours, we have a bit of paradise, where, if our life-work lies without its boundaries we gladly return for refuge and for rest. And with all the modern comforts available our home cannot be a true home if its members do not show consideration, sympathy and interest for each other. Then shall fewer of our sons and brothers go to the saloon, that excrescence of our fair land, for comfort and recreation, and for these the great majority do go at first; later, to satisfy a taste which contracted there breaks hearts unnumbered and lays waste many a promising, manly life and soul. In my thought I can see many different homes of every degree of comfort; from the poorest to the most sumptuous. And many of the poorest, as far as domestic appointment goes, far more comfortable than many of the rich. They have real comfort, which in a home means good cheer, contentment and kindliness. These qualities may be possessed by all the family or by one hopeful, hard-working little woman — the mother.

A mother's steady guiding hand goes far towards making such a home a bit of heaven, and her clear, thoughtful brain and patient, forgiving heart often steer the family ship out of dangerous waters of discord. The daughters as they grow up should prove her close friends and companions and her best assistants in making the home; but all, father, sons and daughters, should unite in giving her their faithful sympathy and love. Then, and then only, can there be that most divine thing, a happy, comfortable home.

HYGIENE OF THE HOME.

By Louise Lansdale, Owensville, O.

[Read at the Farmers' Institute held at Williamsburg, Clermont County, February 17 and 18, 1899.]

Hygiene is the science, practical hygiene the art, of preserving health. The name has been adopted from the French, from which language it has been introduced into most other languages. Writings on health are among the oldest in the world, for the subject has engaged the attention of the profoundest thinkers and the most renowned leaders of men. To confirm this statement we have only to point to the elaborate directions in the Mosaic laws for the preservation of health through scrupulous attention to cleanliness, the isolation of the sick and extreme care in the use of wholesome articles of food and drink. Throughout the whole of their history the Jews enjoyed a remarkable immunity from epidemic diseases, the most of the instances in which such diseases occurred being represented as those in which they departed from the law and doubtless relaxed the wholesome vigilance enjoyed by it. In mediæval and modern history they have often, even down to our own time, been spared the ravages of epidemics when their Christian neighbors were perishing around them.

It is the province of hygiene to seek out and determine the causes of diseases and to formulate rules for their prevention and removal. The special subjects which hygiene embraces are:

First. Those which concern the surroundings of man, such as climatic conditions, the site or soil on which his dwelling is placed, the character, materials and arrangement of his dwelling, the air he breathes and the cleansing of his home.

Second. Those which concern the personal care of health, such as the food he eats and the water and other beverages he drinks, clothing, work and exercise.

Third. Certain points not directly included in the above, such as the care and management of infants, the prevention of disease and the care of the sick room.

The site or soil on which the dwelling stands is of great importance and much that has been attributed to climate has been more truly due to locality. Soils are generally divided into moist and dry, permeable and impermeable, and again subdivided according to formation, composition and slope. Healthy soils are those which are dry and permeable or which have sufficient slope to render drainage easy. It is on this kind of soil the dwelling should stand. The materials of which houses are built are various. Frame houses have advantages but there is always danger of fire. Brick and stone are commonly used, but the best material is good, sound, well-burnt brick. Dryness must be secured by means of moisture proof courses along the foundations. Internally, non-absorbent walls are important, for where air can pass, organic matter can lodge and become a source of danger. Paint that can be washed, therefore, is better than paper, unless the paper be glazed; if paper is used care should be taken in repapering to scrape off all old paste and paper, as it will decompose after a while and become injurious to health. Ceilings should be looked after in the same way, floors should be made of well-fitting seasoned wood and then painted so as to be watertight. Proper cubic space, too, is of great importance, for upon this depends the renewal of air. The air of an air space can seldom be changed oftener than three times an hour, hence the rooms should be large enough to allow such rate of change, providing enough air for respiratory purposes. The furniture, especially in sleeping-rooms, should not be too massive, for curtains and draperies are good traps to catch dust and organic matter. Carpets, too, are a great nuisance; far better had we all painted floors, with a rug here and there, rugs that can be taken up easily and shaken every day.

The warming of houses is important, but is generally wastefully and badly done. The open fireplace has great advantages, but is seldom sufficient. Overheated rooms are a source of ill-health. For sitting-rooms sixty degrees to sixty-five degrees is quite enough: for a work-room sixty degrees is sufficient, sometimes less; a sleeping-room need never be above sixty degrees, sometimes even less with advantage to the occupant. Fresh air ought not to be sacrificed to temperature, except in extreme cases; some economical housewives object to heating all out doors, but this is economy in the wrong direction.

A few years ago I was called to a city in this State to nurse a sick child. When I got there I found an eighteen months' old child with pneumonia. The house was heated by a furnace, but the over anxious parents thought this insufficient, so they took all of the rugs from the floor, a fur robe or two, a couple of sheets and the piano cover and tacked them over the doors and windows, excluding all the air they could, then put a gas radiator in the room and kept the temperature from ninety degrees to one hundred degrees all the time for several days; the result was, the boy was suffering more from suffocation than anything else. I was not long, however, in removing this protection and giving him fresh air, which restored him to health sooner than anything else could have done.

Air is the prime necessity of life. Food and water may be abstained from for a considerable time and we may have an opportunity of replacing either should we doubt its purity or wholesomeness, but the atmosphere around us we must breathe or die, hence the necessity of having it pure. Although this is apparently so obvious, attention to its importance has been very generally omitted.

Water, although included under the head of food and beverage, merits special consideration, so important is its relation to health, both directly as a drink and indirectly with reference to its many other uses. It is required for drinking, cooking, bathing, laundering, cleansing of dwelling, flushing of drains, etc. The hygienic requirements are that water should be good in quality and sufficient in quantity. The evidence in favor of communication of disease by means of drinking water is now very extensive, for a great many diseases are conveyed through this channel. The source of water should be pure; springs, deep wells and upland surface water being the best.

Diet is the next and most important point to consider. The influence of diet upon the health of man begins at the earliest stage of his life (and indeed is then greater than at any other period) and so continues to the end of his journey.

All human bodies are made up of the four elements, oxygen, hydrogen, nitrogen and carbon, together with a small quantity of mineral matter. Oxygen and hydrogen combined form water, which enters every part of the body. Life is maintained by a continual process of combustion, producing heat and energy.

To supply material for such production of vital force and also to build up and repair waste of the tissues carrying on the work, food is required. Our food in whatever form we take it is composed of some or all of the four elements just named. Heat producers are the starch, sugar, fat and gum compounds. Flesh formers are albumen, the most important, with fibrin, casein, gluten and gelatine closely resembling it. Neither group has exclusively the one function, for in transforming albuminoids into flesh some heat is produced, and in all healthy tissue there must be present a certain proportion of heat producers. In addition to these two great groups of food matter certain earthy salts are required; phosphorous for the nervous system, iron for the blood, lime for the bones and potash and soda for the muscles. These we take insensibly, they being more or less in nearly everything we eat and drink. Common salt is the only one we make a practice of adding to our food. In a healthy diet, that is, one in which the supply corresponds to the demand, the heat producers should be more abundant than the flesh formers.

Clothing and personal cleanliness are not to be forgotten. Clothing should supply warmth in cold weather and covering without being oppressive in hot weather, should keep out dampness in wet weather and yet allow sufficient transpiration for health, at the same time it ought to admit of frequent change and cleansing. Personal cleanliness is also a matter of great importance; a daily bath being advisable for every one. Filth is one of the prime factors in the production and propagation of most of the devastating plagues known to mankind.

Prevention of disease is too large a subject for me to take up as I should like to, but I would like to say that much depends on our knowledge of the remote causes of disease. The best rule for prevention of disease is to follow out the general rules of hygiene laid down with reference to pure air, pure water, proper food and cleanliness.

Some diseases may be better provided against than others, such as fevers, by the use of quinine, and smallpox, by vaccination, but for the majority of diseases no special preventive is known. In contagious diseases, such as scarlet fever, isolation is the best means of arresting the spread, but the poisons of others, such as measles and whooping cough, are so subtle that isolation can only be looked upon as a doubtful measure.

Much stress has been laid upon disinfectants, but the majority of the so-called disinfectants are only deodorizers. Boiling water is the best disinfectant known, but it is well to have on hand a bottle of carbolic acid, chloride of lime, or Platt's chlorides to be used where boiling water is not convenient. With a liberal supply of fresh air there will not be much use for disinfectants.

LITERATURE IN THE HOME.

By Mrs. Elsie S. Pierce, Bethel, O.

[Read at the Farmers' Institute held at Bethel, Clermont County, January 27 and 28, 1899.]

In no other home are the members of a family so dependent upon their own resources, both for recreation and improvement of the mind, as in the country home.

Merchants, workers in factories and mines, professional men and women, come in contact with other persons, all through the required number of hours of their work, and when that is over they turn to outside attractions — the social party, entertainment or lecture — to spend their evenings.

But in the country home this is not so. When harvest time is past, and the season of short days and long nights sets in, there is comparative isolation; the family is in a measure shut in from the world and during the long winter evenings each must depend on the others and upon himself, must draw on that which is within rather than without for entertainment.

Then what an opportunity is there for the enjoyment of the thoughts of the best men and women, at their best, as given in good literature. What will be more useful or entertaining than a home reading club, when each reads his favorite book or one reads aloud to the circle? Where could Snow Bound be more appreciated or Tales of a Wayside Inn?

The habit of thought thus formed by studying the thoughts of others is gained by that person for life. To prove it we have only to refer you to the list of names you already know, Gladstone, Lincoln, Garfield, Burns, Irving, Louise Alcott, the Cary sisters, these and many others who spent their youth in country homes, and whose thoughts afterward became known to the world.

We speak of the advantages of education in the cities, but while they may be many, there is one great advantage to be found in the country which should not be overlooked, the uninterrupted evening, for study and reading. And it seems to me parents can do their children no greater wrong than to neglect the care and pains necessary to interest them in reading.

"But," says some one, "my child is now fourteen years old and I have begun to try to get him to read, but he doesn't seem to care for it."

Do you think if you wait until he is fourteen or until he is ten before you attempt to interest him in this that you will succeed? Oliver Wendell Holmes said that the education of a child begins one hundred years before he is born; you must take it up at once.

Another says her child does not care to read, when all the books in that home could be counted on the fingers of one hand, while the current literature consists of one weekly paper (properly spelled w-e-a-k-l-y) and the almanac.

The time has come when there should be a library in every home, to which books are added each year. For your children's reading, begin when their books must be of linen that cannot be destroyed, and with bright pictures to attract their attention. Create an interest in them by reading them aloud. To be sure the litera ture is something like this: "A was an ape, who wore a red cape; B was a bear, who went to the fair," but that is as interesting to the children as the rural column is to you and the object now is to get them to want to know what is inside their books.

As your children grow older, get good, useful books and if they are not able to, read them read aloud and explain to them what is meant. Do not say, mothers, "I have no time." You have time to make pies three times a week. Have less pie and more poetry in life. Do not dwarf the mind to overfeed the body.

A book once read is not exhausted for a child. He will take it to school that his teacher may read it to the pupils; and that teacher over-crowded with grades, hurried for time, though he have but five minutes in the morning and three in the afternoon to devote to it, will gladly take your child's "Stories of Early Settlers," "Seven Little Sisters," or "Robinson Crusoe" and read it to his pupils, both to encourage your child and for the good of others. Yes, if he must leave out a class he will do this, for the teacher of to-day has learned that the highest teaching is not the work laid out by a set of text-books, but to inspire the pupils with a desire to know more than those few books contain.

It is true that all children will not take the same degree of interest in reading, so the more constant cultivation is required for some.

Determine to have good literature in your home and you will find a way. Deny yourself in other things. Let your Christmas presents be books. If you spend but fifty cents, yes, if you spend but fifteen cents on Christmas presents, let there be a new book in the home.

The great naturalist, Agassiz, was called upon by a friend whom he showed through his library. Books were there of priceless value, one of the finest private collections in the world was exhibited proudly by Agassiz. As they lingered over the treasures the dinner hour arrived and the friend was invited to remain. As the dinner was about to be served, Agassiz turned to his guest and said, "In order that I may gratify my passion for books and possess what you have seen, I must deny myself in many ways. Three times a week for dinner we have meat with potatoes, the remainder of the time potatoes alone. I regret to say this is a potato day." And of potatoes the meal was served. Think of this, you who load your tables three times a day.

Not only is a standard library necessary to the intellectual enjoyment of the farmer and his family, but he must have the best current literature. That, you say, we cannot afford; books are cheap but the magazines expensive. I will tell you how a community of farmers supplied themselves with the best current literature. Sixteen farmers' families clubbed together. They took two copies of eight or ten of the leading journals, thereby getting a reduction. Dividing into two sections these magazines were each read by eight families. This would of course make for each family the average cost of one magazine or from three dollars to four dollars for the use of eight.

But this was not all. At the beginning of the year a sale was held and the magazines auctioned to the highest bidder, to be delivered eight weeks after they were received by the club. This was successfully done, the sale was attended by persons who came for miles and the magazines usually sold at an average of one half their cost. This was, I know, carried out successfully for more than five years; how much longer I do not know, but I do know that that community was widely known for its intelligence and progressive spirit, and it was composed of real farmers who lived on farms.

There is another means at your command to supply every home with the best of literature. The State of Ohio has provided books, traveling libraries, to be sent to the rural districts. These libraries are collections of from twenty-five to thirty five books, which are sent out from the State Library to clubs of fifteen persons or more, which may be kept three months with the privilege of renewal. There are ten or twelve thousand of these books and the number is constantly increasing. The club must pay the expense of transportation both ways, have a responsible librarian and a bondsman responsible for any injury to books, exclusive of wear and tear. Instead of a club a board of education of three can by the proper steps obtain these books.

To meet the expense suppose twenty families pay in fifty cents per annum to the club or board. Ten dollars would certainly pay the transportation for the entire year and for fifty-cents you have the privilege of reading from seventy-five to one hundred good books. These libraries are for you. The State asks that they be more widely used. I have faith that you will use them.

Let us not live merely in an atmosphere of dollars and cents. But let life take on a higher aim and be filled with thoughts of the noble and true. You may leave your child a clear title to houses and lands, but unless besides this his inheritance is a cultivated mind, the power of improvement and enjoyment from his own resources, a fountain within from which to draw, you have robbed him of that which is his right, a prosperous, contented, intelligent citizenship.

VALOR IN THE HOME.

By Mrs. Abbie H. Starbuck, Colerain, O.

[Read at the Farmers' Institute held at Colerain, Belmont County, December 7 and 8, 1898.]

It is said that a young man should have a cage before he procures the bird. This is surely true, though it is expected of him to know where that bird is, and his fair likelihood of the capture.

Finally when the bird is by its mate to dwell with him in that structure, what is it? A cage, a prison, a factory, a mere boundary wall, a house, or a home? It is just what that pair make it, and may be any one of these. Let us prefer to consider it a *home.*

In order to have a perfect home, valor must be possessed by both. What is valor? The quality and strength of mind that enables a person to encounter danger with firmness and intrepidity; courage as manifested in warfare, "A soldier of unquestioned valor."

There are dangers of unhappiness, dangers of sin. Do we possess the valor, the quality and strength of mind sufficient to meet and dispose of the many perplexities of life in such a way as to promote peace and happiness in those about us? Nothing in itself is great; greatness consists of little things combined. As the multitude of little drops make the ocean in all its grandeur, so little things make up the sum of life.

Now what is home? A place or abode of affection, peace, and rest; a congenial abiding place. Note these words: affection, peace, rest, a congenial abiding place. Where we love is home, home that our feet may leave, but not our hearts. Can there be a home without valor in it? Is it home where there are growling, complaining, scolding, fretting, cross looks? Do these make affection, peace, rest, a congenial abiding place? Do we love, are we kind, and do we deny ourselves for the pleasure of others? If we profess let us possess and practice.

I am often reminded of the deacon who sometimes felt that nothing but the trump of Gabriel could arouse his people from their sins and make them believe on the Lord and follow His footsteps. After much thought, he one evening said: "My dear friends, you all know, though I did not give notice to that effect, that this week is the week of prayer. I have a mind to ask you for this once to make it a week of practice instead. I want you to take topics; for instance, Monday is the day of prayer for the temperance work. Try all that day to be temperate in speech, in act, in indulgence of any kind that is hurtful to you. Thursday is the day to pray for the family relation. Let us each try to be to our families on that day in our measure what the Lord is to His family, the Church, remembering the words: 'Fathers, provoke not your children to anger,' 'Husbands, love your wives and be not bitter against them.'" In like manner topics were assigned for each day. At the close of the week they all met and one was chosen to give his experience. The first three days he encountered many difficulties. When the day for the family relation came, he started to make the fire and found that his boy, Joe, had forgotten to get the kindlings; he opened his mouth to give the boy a good scolding, when it suddenly occurred to him that this was the day of prayer for the family relation; so he said nothing, went and got the kindlings, and when the fire was burning brightly, called his wife. "Dear me!" said she, "I've got such a headache, but I'll come in a minute." He didn't mind that for a moment, for women are always having aches and pains, and he was about to say so, when he remembered the text about not being bitter against them; so he said: "Philury, you lay abed, I expect Emmy and me can get the victuals today." She turned and gave him such a look that he was amazed. There was his own wife, who had worked for and waited on him for over twenty years, frightened because he spoke to her kindly. He brought in the pail of water she had always drawn for herself, then milked the cow. When he came in, Philury was up frying the potatoes, and the tears were shining on her white face. He said he felt a little meaner than he did the day before.

But that was nothing to his experience in the evening: he was going down the cellar stairs for some apples so the children could have a roast and merry time, when he heard Joe, up in the kitchen, say to Emmy: "I do believe, Em, pa's goin' to die." "Why, Joe! how you talk!" "Well, I do; he's so everlastin' pleasant and good-natured, I can't but think he's struck with death." The father sat down on those cellar stairs and cried; yes, wept bitterly. It seemed as though the Lord had turned and looked on him as he looked at Peter. Why there were his own children who never saw him act real fatherly in all their lives. He had growled and scolded and prayed at them and tried to bring them up on the principle, "As the twig is bent the tree's inclined," but had never thought that they had a right and reason to expect him to do his part.

How many of us are doing our part in making our abiding place a home? How many each day exert an effort for some good? We each have an influence over one or more, there is progress either up or down, never any standing still. Let us scatter seeds of good, let us gird ourselves as soldiers of love, soldiers of peace, soldiers of happiness.

It is only a few more years and all that now tread the earth will be no more. The rich, the poor, the gay and the beautiful will have found a resting place beneath the clods of the valley.

May we all, when we cross the river of life, disembark on the golden shore, and enter the pearly gates where eyes shall cease weeping and hearts shall break no more.

FOOD AND ITS PREPARATION.

By Lyda F. Lantz, Loydsville, O.

[Read at the Farmers' Institute held at Belmont, Belmont County, January 25 and 26, 1899.]

That we may be physically and mentally able to perform our day's work is of the greatest importance, but not many of us realize how much this depends upon the food we eat. Prosaic as it may seem, "a healthy mind in a healthy body" is largely the result of proper nourishment. Too often the welfare of the body is left to chance; then, when our patient servant fails us, the cause is attributed to anything else rather than to our own ignorance or neglect. The highest scientific knowledge, the best appliances, and the most practical heads should be at the service of those whose duty it is to select and prepare our food. In only a few parts of the world and among certain classes of people is this the case. The application of scientific principles on these lines is not of long standing, for the investigations that have clinched them are all of comparatively recent date.

The successful farmer studies very carefully the ration which he shall give different kinds of stock of different ages and at different seasons. He not only considers the kind, quality and amount of food, but he inquires into its composition, and notes the effect of new combinations, and methods of preparation. The animals must thrive, but there must be no loss from injudicious feeding. In the same way the housewife may consider the food question in relation to her family. It is more or less important that she should economize, but her path will be full of pitfalls if she does not understand in what true economy consists. Each member of her family, young and old, student and manual laborer, should be supplied with that which his individual case requires.

Many people, with a real interest in this subject, have certain pet theories as to food. Some are convinced that most people eat too much, and others that meat is the all strengthener; still others are affected with the vegetarian fad, and whatever their special views, they do not look far enough to see that each is but one of the many sides of the complex question of nutrition.

We learn that in the processes of digestion and assimilation the different ingredients of the food undergo a great variety of chemical changes and some of the compounds that are formed may be at times harmful in one way or another. Indeed, some of the compounds produced from the food in the body may be actually poisonous. Different people are differently constituted with respect to these chemical changes which the food undergoes and the effects produced, so that it may be literally true that "one man's meat is another man's poison." This is the case with milk. While for most persons it is a very wholesome, digestible, and nutritious food, there are those who are made ill by drinking it. In like manner some people are made seriously ill by eating eggs, fruits, or other food materials. All persons are alike in that they must have protein for the building and repair of the body and fuel ingredients for warmth and work. But they differ widely in the amounts and proportions they require.

For persons in good health and with good digestion two important rules are given for observance in the regulation of the diet. The first is to choose the things which "agree" with them, and to avoid those which they cannot digest and assimilate without harm. The second is to use such kinds and amounts of food as will supply all the nutrients the body needs and at the same time avoid burdening it with superfluous material to be disposed of at the cost of health and strength.

For guidance in this selection nature provides us with instinct, taste, and experience. Physiological chemistry adds to these the knowledge — still new and far from adequate — of the composition of food and the laws of nutrition. In our actual practice of eating we are too apt to be influenced by taste — that is, by the dictates of the palate; we are prone to let instinct be overruled by acquired appetite and we neglect the teachings of experience. We need to observe our diet and its effects more carefully and regulate appetite by reason. In doing this, we may be greatly aided by the knowledge of what our food contains and how it serves its purpose in nutrition, but time will not allow us to dwell on this phase of the question. Any one who wishes to study the subject can obtain valuable information by writing to the United States Department of Agriculture for bulletins on the various foods, their chemistry and nutritive value.

Supposing the right kind of food to have been selected, the next important point is its preparation. Here is shown the most striking difference between uncivilized and civilized man. The former takes his nourishment as it is offered by nature; the latter prepares his food before eating, and in ways which are the more nearly perfect the higher his culture.

Let us consider a piece of meat with reference to the effect heat has upon it. We are told that the red part is made up of, first, very tiny sausage-like bags, or muscle fibres as they are called, and in these is contained the precious proteid matter, flavors and salts all mixed together with water into a sort of jelly; second, these muscle fibres are bound together by strands of connective tissue, as that white stringy mass is called in which the fat and blood vessels are lodged, this is also of food value but inferior to the fibres; third, dissolved in the juices floating between the fibres and strands, there is also proteid called soluble albumen. The little bags of proteid, when we can get at them, are as digestible in the stomach as the white of an egg, and like the egg their flavor is improved by slight cooking, but, as we have seen, they are imprisoned in the connective tissue. This can be softened by heat, thereby turning it into a sort of gelatine, but unfortunately, unless the meat is very tender, this requires a longer application of heat than is needed to cook the albumen, all full of delicate flavors which too often go to flavor the house and premises instead of the meat when brought to the table.

To soften the connective tissue without overcooking the albumen is one of the problems of meat cookery. How do our methods of cooking fill these requirements?

Put a piece of lean meat into cold water, heat it very slowly and watch the effect. The water becomes slightly red, then cloudy, and, as the heat increases, yellowish in color, and finally it clears sending a scum to the surface. Is this scum to be removed under the impression that it is made up of impurities? The chemist tells us that it contains much soluble albumen and a large proportion of the salts of the meat as well as other nutritive elements; and now the odor of the boiling meat begins to fill the kitchen.

This is the process known as soup making — very simple, if we care nothing for the piece of meat but to soak out of it all the food and flavors possible. After some hours of cooking we find the meat shrunken, gray and tasteless. A dog, if fed on that alone, could not live many days. Not that it contains no nutriment, but the stomach rejects it after being separated from all the flavoring matters.

Now put a piece of meat into boiling water and continue the boiling. The surface of the meat suddenly whitens and a little scum rises on the water, though very little compared with what we saw in the former method. We have coagulated the albumen contained in all the little cells in the surface of the meat, and the juices cannot get out: the sealing up is not quite perfect, enough escaping into the water to make a weak soup. At this point we are likely to make a mistake. If we go on boiling our meat, we shall overcook the albumen in the outer layers before that in the center is coagulated. By overcooking, we mean making it horny and flavorless. Having seared the outside of the meat to keep in the juices, we must lower the temperature. The albumen coagulates at between one hundred and sixty and one hundred and seventy degrees, but the water in the kettle may be a little above this, as it must constantly transfer heat to the interior of the meat. The general rule is that it should "bubble" or "simmer" only, and if the cook can do no better she must follow these directions. That the true temperature for cooking meat is below the boiling point, many an intelligent house-keeper knows, but how is she to know when the water is at one hundred and seventy degrees? Here we come upon the weakest point in household cookery; various degrees of heat have different effects on the foods we cook, but of only one temperature is the house-keeper certain — that of boiling water.

But to return; is there no way of cooking that will keep in the meat all these flavors and juices, just as nature mixed them? Yes, there are three ways — frying in fat, roasting in an oven and broiling over coals. If we put a thin piece of meat into boiling fat, the albumen in the surface is coagulated as in boiling, but this time the outer rind preserves the juices still better, because the fat will not mix with them as will water.

When we roast a piece of meat, the surface is quickly seared by the intense heat, but we should moisten the surface frequently with fat. If we do not baste the roast, we will find a thick layer of gray, tasteless meat inside the outer brown crust, and, indeed, the whole piece will be dry long before the center of our roast has reached the coagulating point. In broiling, the principle applied is exactly the same as in roasting; the cooking being done by the medium of heated air; the dry heat of the coals affects the outer layer of meat, as does the hot air of the oven. In both these methods, just as in boiling, we try to have the temperature only high enough to keep the heat traveling toward the interior of the meat.

Having cooked the albumen enough and not too much and kept the flavor of our meat, how has the connective tissue fared with our different modes of cooking?

If the meat is tender to begin with the connective tissue will soften into eatable condition in the length of time required to cook the albumen by the methods described. But if the meat is tough the application of heat must be continued till this tissue softens.

Vegetables contain a large amount of water, or as it is frequently called, "juice." The solid matter consists largely of microscopic cells filled with starch grains. The walls of these cells are composed of cellulose or woody fibre, which resists the action of the digestive juices, so that these cannot get the starch contained within. It is for this reason that the raw vegetable is, as a rule, unfit for food. When heat is applied the starch grains absorb water from the juice, swell up and finally burst the cell walls, so that the texture of the vegetable becomes soft and the nutrients are easily attacked by the digestive juices.

During the process of boiling vegetables there is more or less opportunity for the nutrients to be dissolved by the water and lost. With potatoes this can be avoided by cooking them without peeling. When they are peeled the least loss is sustained by putting them directly into hot water and boiling as rapidly as possible. Even then the loss is very considerable. If potatoes are peeled and soaked in cold water before boiling the loss is very great, being one-fourth of the albuminoid matter. The objection made to cooked cabbage, that it fills the house with its odor, may be overcome by sending the cabbage to the table before it reaches that stage, thereby retaining the best of its flavor. Tomatoes seem naturally to require plenty of cream or milk in their treatment to neutralize the acid. Here may be said a word about the use of milk as food. Cream is the most digestible fat because in a state of emulsion. Skim milk contains considerable protein, which is the most expensive element of our food and the one most likely to be lacking in ordinary dietaries. The ways in which a skillful cook can use milk in cooking are almost endless and the protein thus added to the daily food is of the utmost importance.

Fresh fruits contain only small amounts of nutriment but are valuable for their flavor and use with other foods. They are best in their season and it is a question with some authorities whether they are needed as food at any other time. The housewife who limits the supply of fresh fruit and labors over a hot stove to preserve a great supply for winter use is foolish in more ways than one. The importance of dried fruits is probably not well enough understood. Fruit loses in drying a large portion of its water, leaving its nutritive parts in a more condensed form for our use.

Long ago bread was styled the "staff of life," but it was not fine, white bread — the pride of the modern good house-keeper. This has long been understood by many, but graham bread, the only alternative for many years, was not palatable.

Now with improved methods of milling, whole wheat flour is produced that will make as light, spongy bread as roller process flour, while in flavor and nutritive value it is far superior.

Oat meal and the grain preparations require long cooking to break up the starch cells. If placed in a double boiler, over a slow fire, they may cook for several hours without any attention. It is claimed that oat meal has no nutritive value unless cooked in this way. However that may be, it is certain that the food value of both oat meal and corn meal is increased by long cooking.

The preparation of food is an inexhaustible subject, but enough has been said for the present. It is especially true of this department of household work that "practice makes perfect," intelligent practice we mean. In order to secure that we must have clear ideas of the object to be accomplished. Within the past few years sufficient literature has become available to enable any intelligent woman to gain a practical knowledge of the laws of growth and the utilization of energy. She does not need more receipts, more books on the specific food to be used, so much as she needs a knowledge of the whole subject of food and nutrition, the physiology of digestion and the economic and nutritive value of the different food substances.

"The mother who provides the food through the assimilation of which the child derives the energy that enables it to comprehend its lessons or accomplish any task, has not the least office in the education of the child."

When the functions of food are better understood by the housewife, the science of nutrition will be studied with more zeal. Women are so conservative that time and much convincing proof are necessary to secure the adoption of new ideas, but once they become assured of the value of this knowledge, they will be eager for its acquirement.

THE MOTHER AS A TEACHER.

By Mrs. L. B. Jackson, Delaware, O.

[Read at the Farmers' Institute held at Delaware, Delaware County, December 12 and 13, 1898.]

It is in the capacity of a teacher that the mother exerts her greatest influence. The baby takes its first lesson in observation by looking into its mother's face and responding to her smile. The little mind is impressed day by day by her words and acts, and baby soon does what mamma does. These early impressions are so wrought into the mind that they are retained long after book lore is forgotten.

We who are called to the exalted position of motherhood should never feel that we are without opportunities in the world, but should rather know that our privileges are almost limitless, for who can calculate the tremendous power of influence? Does it not seem that our responsibilities are very great since false impressions seem to grow with even more potency than good ones? Have we not observed what unceasing effort it often requires to teach a child something good and noble, while he will, perhaps, learn an objectionable word at one hearing? Verily, we have been made to exclaim: "The heart of man is inclined to evil as the sparks fly upward."

First of all we should teach our children obedience. Disobedience in the home leads to disregard of state and national law. But just how to bring this important matter about is often very perplexing. To do right because it is lovely to do right should be the motive laid before the child; to obey for the sake of some promised reward is a selfish motive. He should know that you will provide for all his needs and that the greatest thing you can desire for him is that he should be good and true. To obey from fear of some animal or hobgoblin that, he is told, will eat little boys and girls if they don't mind is most cruel and barbarous to a child. Parents who are thus untruthful to their children need not be surprised if in after years the children are untruthful and deceptive to them. My heart aches for children who are frightened by supernatural tales. The writer has some such recollections herself, and will say that none of the trials that have come with maturity have been so hard to bear. The child struggles blindly with these things while we have the light of reason and God's truth to help us through the dark places of life. Let us teach the dear children that the only thing to fear in this beautiful world, God's world, is sin and the dark stain it leaves on our lives. I believe that disobedience and wrong doing should be punished; but always for the child's good, and not to gratify our anger. It is hard for him to understand that we can give pain and love at the same time, even as it is hard for us to feel that God's chastisements are done in love, but the knowledge will come to him in future years, as it will come to us in the future existence.

Our children should be taught to reverence God in His wonderful creation and His revealed Word. How many homes in which God's name is never mentioned except in profanity or in a half embarrassed way! What more beautiful example to hold up to our children than the life of Christ!

What shall a mother teach her daughters? Indeed the relation between mother and daughter is so close that it can hardly be called teaching. It is more of a growth and an imitation of virtues, habits and faults. First of all our daughters should be domestic, and I wish I might express this with as much emphasis as I feel it. The home is woman's natural domain, and to be able to manage its different departments with ability and economy is, I consider, a very great accomplishment. True, not all our daughters become wives, but even those who gain a livelihood in the business world are all the better and broader minded for a domestic education. A great many girls have the silly idea that to be accomplished is to know as little as possible about housework, and I believe some mothers encourage this false idea. I once heard an indulgent mother remark that she must get another servant, as her daughters were spoiling their hands in the kitchen. Many a man of moderate means — and most men in the world are men of moderate means — has found to his sorrow that white hands and little feet, if that is all, are a poor foundation on which to build a home and happiness. If our seminaries could teach many of our young ladies what God made hands for, they would confer a great blessing on humanity. No room for idle hands in this world! Too many burdens to lift, and brows to bathe, and hungry to feed, and homes to beautify, and too much dirt to eradicate!

I have been greatly impressed by the broad education given the girl queen of Holland at the dictation of a sensible mother. Not only has she been educated in literature, political lore and the languages, but it is said she cooks like a skilled matron, makes her own dresses, attends her own garden, and takes a personal interest in the occupation of the most humble of the simple-minded, home-loving people over whom she rules.

However many accomplishments we may give our daughters, they should be encouraged to concentrate on one thing by which a livelihood may be gained, if necessary. Something that the world must have, whether it be skilled cooking, artistic housekeeping, music, teaching, book-keeping, or one of the many other things by which a fair income may be gained. There is nothing more pitiable than girls thrown helpless and incompetent upon the world by reverse of fortune.

And the dear boys! How near their interests lie to our hearts! What shall we as mothers — rather as parents, for I believe the father here has the greater influence — strive to teach the boys. I believe we will all unite in saying: "Let us teach them to be pure." There is a tendency to regard lightly the wildness and recklessness of youth as a sort of necessary period in a boy's life. And how often it happens that when boyhood is past these faults have become fixed habits with the man. If we would have pure manhood we must begin with the boy; yes, earlier than that — we should make our own lives worthy examples of right living, and to be entirely safe we are told that we should begin as far back as the grandparents. We should begin with the boy to teach business habits. Pay him for his work and he will do it more willingly. Require him to purchase some articles for himself and they will last longer. Let him learn while young that money accumulates very slowly. There is a tendency to ignore small savings. All wish to gain a competency, but wish to accomplish it at a few lucky strokes, while the foundation of most fortunes, whether small or great, is the price of sacrifice, patient industry, and economy. If we could persuade our boys to take out a few shares in the Building Association and save the money they squander for tobacco and other harmful indulgences, it would help them to develop business and manly character; for what is there that adds dignity to manhood so much as having something laid by. I feel like dwelling on this business idea, for I must confess an almost worshipful regard for it myself. I believe a man is responsible to God for a business talent. But there is danger along this line. There is nothing that so dwarfs a soul as the accumulation of money for selfish aggrandizement. And I fear that many will never awaken to its great sin until it is too late.

Greater than all is character, and I like Moody's definition of it: "Character is what a man is in the dark. Not so hard to be good when the eyes of the pure are upon us. But can we stand the test of the darkness away from these restraints?" Character — God's distinction between man and man. Character — the judgment test. We cannot all be rich; we have not the business capacity. We cannot all be great; we have not the intellect. We can all have beautiful characters, which in God's sight is better than all.

What is that which we hear in the distance? It is the children, coming from the north, south, east and west to take possession of this great country. Soon all its positions, from the highest to the lowest, will be in their hands, and it rests largely with us as parents to decide the character of their dominion. The home life is the cradle of our national life. Let us, as true mothers, strive that our boys be men of business, men of character, men of patriotism, men of God: and that our girls, the mothers and teachers of the coming generation, shall be no whit behind them in dignity, power and wisdom.

THE FARMER'S WIFE.

By Mrs. T. J. Wilson, Rehoboth, O.

[Read at the Farmers' Institute held at Rehoboth, Perry County, December 16 and 17, 1898.]

The wife has played no minor part on the farm since Adam and Eve began farming in the garden of Eden, and the wife of today should know not only all her foremothers knew, but she should know a great deal more and know it a great deal better. The world moves and we move with it. The aim of our lives should be onward and upward.

It has been said that woman's work is to keep things clean. A very important work, I admit but is that all? Let us, if you please, enumerate a few of the duties of the farmer's wife. She is cook, housemaid, washerwoman, dairymaid, gardener, florist, poultrymaid and seamstress; mother, nurse and teacher. We might go on almost indefinitely. I firmly believe however we should be thankful for work; without it we would be miserable creatures indeed. Work is essential to both body and mind. Honest toil sweetens rest and earnest effort brings its sure reward. But as farmers' wives we are inclined to let our manual labor so fill the time that our social, mental, and sometimes moral, development are left entirely out of the question. I heartily agree with Ruth Ashmore, who says: "It is ours, not only to make our lives as good as possible, but as easy as possible. Easy in the right way, not by neglecting our duty, but by taking up our burden with a smile."

Of course we all realize that housework must be done, if we wish our families to enjoy any degree of comfort, but the old saying, "All work and no play makes Jack a dull boy," is applicable to the farmer's wife, whose play days are too few and far between. That the existing condition of the farmer's wife should be changed, can but be apparent to all who have given the matter any consideration whatever. The life of the average farmer's wife is a continual drive, and what seems to be selfishness is in reality only an intense devotion to the work which is before her, which must be done, and which, she knows, there is none other save herself to do, so with a mistaken sense of duty she gives up all society, shuts herself up at home and devotes her whole time, thought and mind to the daily routine of housework, week in and week out, with never time for a walk or a talk with her children, never time for any reading, except, perhaps, a hasty glance at the weekly papers, seldom time to visit even at the dear old home or among the nearest neighbors, has not been to a lecture for years, and perhaps not even to a farmers' institute. No time for anything save the hard, monotonous, solitary life of housekeeping. And what is the consequence? Why, we have the awful fact confronting us that three-fourths of the women found in the insane asylums are farmers' wives.

Not that there are not abundant sources of happiness on the farm and in the country. I believe, (with a little reformation) that it is the ideal place to live and rear our children, away from the evils of the city, the place above all others where they can develop a good, strong physique. But the trouble is we tire of the same things over and over again, and we long for new pleasures, new sensations, especially those of us who are of a social nature and would enjoy living more in touch with the world. We know that the mechanic's wife, with her baked bread and provisions sent to her door, with no cows, calves, chickens or pigs to worry her, with no harvest hands to wear out her life in hot summer, must have a great deal easier time than we, and she must see more of the world, hear more, know more, and just so far live more. And then when we are feeling all this, stuck fast in the blue mire of despondency, some friend or neighbor will come along and tell us to be contented. Why its like telling a child to be wise, be learned, without putting the means of an education in his hand. There are many farmers' families to whom I think it would be a positive sin to preach contentment. It isn't the gospel of contentment we need preached to us, but the good common sense doctrine of getting more out of life. God commands the cultivation of all our powers, that we may do better work with them. Happily we farmers' wives, as well as those whom the world considers more favored, are awakening to the fact that we were not created for labor alone, and we believe the time is coming when home-making on the farm can and will be accomplished without devoting our lives to drudgery and mental stagnation.

We can hardly pick up an agricultural paper nowadays without seeing articles headed like this: "Farmers' wives take a rest," "Do try to rest a little," "Farmers' reading circles," "A trip for the farmer and his wife." Yes, of all the people of this big, round earth none are more deserving of a good, well-earned rest than the hard working farmer and his wife. I think I am safe in saying, however, that the farmer has ten chances to his wife's one of meeting and conversing with the people. Yes, farmers' wives live too much like chickens, cooped up.

I have always been a great believer in clubs, especially women's clubs, as a means to enhance sociability and develop mental faculties. I am glad to know they are springing into existence all over the land, though they seem, as yet, in most cases to be confined to the cities and towns. I know of no woman's club in this whole surrounding country, although the subject has been agitated somewhat. But most of us think we have not time to attend club meetings. I believe we should have time and the day is coming when we will have time for such things. I can not say how or point out the way. That is the hard part. I believe, though, as farmers' wives we have been spending too much time trying to prove the truth of that old saying: "The nearest way to a man's heart is through his stomach," and we have failed outright. Better call a halt and give them more simple and wholesome food, which requires less time to prepare. Again we can accomplish a great deal by good management, not only in the economy of our time, but of our strength.

It is not necessary that farmers' wives should be lacking in culture and refinement. Many of our daily tasks have been done over and over again so many times that it is a real pleasure to be learning something in the meantime to take up the mind. The poem or the wise saying may be pinned to the wall before us as the dishes are being washed, or the book laid open, upon a table near by, that we may catch a line now and then as we work; the beautiful thoughts will become ours and we will be richer for time and eternity.

I am not here to advertise the "Grange," but I can not pass over without saying a good word for it. We are glad we have the Grange; we think it a grand order; but we are pained to note that we have comparatively few farmers' wives in our membership.

The mental and social condition of the farmers' wives has been of peculiar interest to me and I have only touched upon the subject here and there hoping that it may lead us to give some thought to the matter and see where we stand.

In conclusion I would say, let us have rest, recreation, magazines, books, companionship with our neighbors in clubs or in the Grange, and becoming clothes to wear, and we shall hear no more about farmers' wives filling insane asylums.

THE TOWN AND COUNTRY CLUB.

By Mrs. Margaret Douglas Rogers, Piqua, O.

[Read at the Farmers' Institute held at Piqua, Miami County, February 10 and 11, 1899.]

The Town and Country Club is, I think I may say with a becoming sense of modesty, a younger sister of the Farmers' Institute; — a very young sister, for she is but four months old, but very clever for her age, we think, for she has already accomplished a good deal, and has won the hearts of a great many of our town and country people.

The Farmers' Institute is for the farmers, the Town and Country Club is for their wives and children, and the farmers themselves are always welcome, of course, wherever their wives and children are.

The club rooms are three in number, and are large and airy. The front room, which opens upon a balcony, is charmingly furnished and is a delightful place to get warm on the bitter cold days of winter, or cool when the mercury registers ninety in the shade. It has the best magazines and books, a daily paper, plenty of writing materials, sofas, luxurious arm-chairs; everything in fact necessary to provide a pleasant place where one can rest, meet a friend, leave one's children or await one's husband when business delays him. Then there is a lunch-room and nursery, in which are plenty of tables and a good place to heat your coffee when you wish to bring your luncheon to town, and cribs, story books and small chairs for the children. A toilet-room fully equipped, even to pins and curling iron is an important feature, and a large, deep closet where you can leave your packages and have them checked, is an added convenience. An efficient matron is in charge of the rooms from nine o'clock until six daily, and on market evenings until the members of the club wish to leave.

We have a membership now of over seventy families, who use the rooms constantly. They lunch there, dress there, meet their friends, visit, await trains, leave their children or packages, and find them very convenient in many ways. It is so much more comfortable and pleasant to meet friends there than in a store where one is liable to miss them; arm-chairs are so much more comfortable than high stools!

The Federated Clubs and the merchants of Piqua have made the Town and Country Club a possibility, but in answer to a very unjust accusation I have heard once or twice expressed, I would say that instead of the merchants doing this to drive people out of their stores, it has been done for the express purpose of obliging their customers and coaxing them in, for they have argued that with such pleasant accommodations more people will come to Piqua, hence more custom.

The annual dues for membership in the Town and Country Club, with all its privileges — and these include occasional entertainments — for an entire family, are one dollar, payable, if preferred, quarterly; less than two cents per week for all the privileges of the club for an entire family. I hope you will help us to make this aspiring new club an inspiring old one some day.

And now to each and all of you, as the proud president of this progressive organization, I extend greeting, and hope you will visit us in our rooms on Main street, in the heart of the business portion of the city, and as many of you as have brought luncheons partake of them there and accept our most cordial welcome and a cup of coffee.

FARMERS' MUTUAL INSURANCE COMPANIES.

By R. E. Sawyer, Tiro, O.

[Read at the Farmers' Institute held at Galion, Crawford County, February 1 and 2, 1899.]

Mutual insurance companies have been organized to furnish protection to the farmers at actual cost and to protect them from the sometimes exhorbitant charges of joint stock companies.

The last report of the State Commissioner of Insurance shows over one hundred mutual companies now operating in this state, and that the cost of insurance in these companies has been much less than in stock companies. These mutual companies are now carrying in risks nearly one hundred and thirty-five million dollars worth of farm property and represent the property of thousands of farmsrs throughout the state. Careful estimates show a net saving to the farmers of about two hundred and eighty thousand dollars per year, when compared with cost of insurance in old line companies What a magnificent showing when we consider the fact that the first mutual company was organized less than twenty-five years ago, and many of them have been started within recent years. It is no longer an experiment; it is a success and has served as a lesson in economy.

The financial conditions through which the farmers have been passing, the success of the earliest formed mutual companies and the doubling of rates in stock companies have had much to do with the organization of our younger mutual companies. Statistics prove beyond a doubt that stock companies have been making plenty of money by insuring farm property, and by turning the tables the farmers can save plenty of money by protecting themselves.

Mutual companies have been so successful, securing the very best risks in the territories in which they are located, that some stock companies have abandoned farm risks and others are contemplating doing the same. And why? Simply because they are compelled to take the poorer classes of risks. They announce, however, that it is because of the isolation of farm property and the lack of facilities for putting out fires when such do occur, but, mind you, before mutual companies existed the isolation was the very reason they gave for taking desirable farm property. Their argument seems to be too flexible to have much weight. If there is any "doctrine of probabilities" that will apply to joint stock companies the same can be applied to mutual companies. If in order to secure certain profits, pay certain salaries and adjust an average of losses, it is necessary to fix a certain rate for every one hundred dollars insured, as a premium, then by reducing the salaries, throwing out the profits and securing payment for a small average of losses, you will find that the "probabilities" are that you are saving just about one-half of your money.

Following this doctrine mutual companies are managed with greater economy, the salaries and fees are paid more on a basis of farm wages and prices of staple farm products and the officers are just as honest and capable as any that are secured in stock companies.

Statistics further show that about two dollars out of every four dollars of premiums paid by members of stock companies go to agents, officers and as declared dividends on stock, while not more than two dollars out of every fifteen go to pay the running expenses of a mutual company.

No better example of a successful company can be given than the Crawford County Mutual. It was one of the first mutual companies organized in the State and stands third today with five million eight hundred and thirty thousand five hundred dollars at risk. The average annual assessment for the past twenty-one years has been about one dollar and fifty cents for every one thousand dollars insured.

By careful estimates we find that fully one hundred and fifty thousand dollars have been saved the members of this company, and while seeking insurance at cost we have also found insurance that insured; also insurance that gave no profits to any one and all money has been kept by the members until needed.

The time is past when individuals can afford to carry their own risks. To say the least, it would be a desperate piece of business, and when losses occur for such lucky-go-easy people, but little sympathy is felt by the general public. No farmer should stake the worth of his buildings, their contents, etc., in luck. A person with ample means to rebuild in case of fire loss could easily carry insurance, and the farmer whose means are limited and who would not have the ready money to rebuild should lose no time in securing insurance in some good company.

We hold no grudge or personal animosity against any old line company — the most of them are secure. They have accumulated vast sums of money and hence are doing a safe, sure business. But this we do find to be the facts: 'A better class of risks are secured in mutual companies, every officer is a member thereof and has the good of the company at heart, the risks are taken at a low estimate of three-fourths of their actual cash value, hence over-valuations are not of frequent occurrence; perpetual insurance with re-valuations every ten years saves much to the members in policy and premium fees; explicit confidence in the management is maintained throughout the entire membership by a rigid enforcement of the rules and laws governing the same.

Members of mutual companies should ever strive to protect themselves as well as the companies from loss by fire or lightning. His own well being and protection is the first prerequisite of a good farmer. Recent reports show that lightning risks in the country are nearly six times larger than in cities and towns and the reason given is that a larger amount of metal roofing, spouting, iron pipe and electric wires are in cities and towns than in the country. A good argument then, fellow farmers, for metal roofs and lightning rods. For the better protection of mutual companies, farm life and property, the buildings should be well yet cheaply rodded. Metal strips, or even barbed or galvanized wire, passing over the roof of the house or barn and properly connected with moist earth make a good, safe, yet cheap conductor of lightning and one that any farmer can put on without the outlay of a single dollar. All the means at hand should be employed to provide protection for all life and property on the farm.

AT OUR BEST.

By Mrs. Imogene C. Plumly, Little Hocking, O.

[Read at the Farmers' Institute held at Coolville, Athens County, November 30 and December 1, 1898.]

Living is the principal thing man does while passing through this earthly existence; yet, strange to say, many do not even approach to the possibilities that life offers, comparatively few are at their best, physically, mentally, morally. The farmer's occupation is supposed to be a healthful one, as he receives plenty of exercise in the open air, and exercise and air we know are essentials to health; but the farmer and his family spend a great part of their time indoors and hence they often err by not having good ventilation. There are miles of pure air surrounding our earth, yet our houses are closed so carefully we are often compelled to breathe vitiated atmosphere. In the sick room, often, every door and window is shut, and one going in can tell in a moment that the oxygen is in a great measure consumed, making it much harder for the patient to battle with disease by excluding that life-giving element.

In buildings where many people are gathered together, unless there is fresh air constantly pouring in, we breathe the same again and again and it is this poison taken into our lungs that causes the headaches, fainting, colds and heart-failures so frequently developed in such assemblies. Our Creator has made laws to govern our physical as well as our moral and mental natures and has endowed us with a sense of pain to warn us instantly when we transgress many of them; but others, like the breathing of impure air, it takes longer to recognize, although they may be as detrimental to the health. In our houses, night and day, in the churches, in all places of meeting, care should be taken that at no time we lack for that one thing which no man can buy or sell, which is free to all, and without which we can not exist — pure air.

Colonel Roosevelt was so delicate when a child that he could not be sent to the public schools. His great desire was to be strong, to be able to endure. He spent much of his time out of doors, took long walks by the seashore, tented on the plains and climbed the mountains of the west, fitting himself physically as well as mentally to be a pride to the American Republic. All that has been told of him shows him to be a man at his best in every sense, honest, moral and fearless.

Physical culture should be taught in the schools. To sit, stand and walk properly, to breathe the pure air, will develop many a dull and puny child into a strong and intelligent adult. I have seen young people acquire the habit of not standing at their full height and persist in it until they became round shouldered, because they were taller than their playfellows. Better stand erect, boys and girls, and let yourselves develop in whatever direction nature intended if you become as tall as Og, king of Bashan.

Man is not the strongest animal on the earth, yet he is the dominating power because brain surpasses mere strength; but the brain needs strengthening and developing as well as the body, and will brighten like good tools by constant use.

In an address to the farmers not long ago a certain speaker stated that we as a class are not represented in the legislatures and congress as we should be; that where there are four or five farmers, lawyers are numbered by the hundreds. That is one side of the question. On the other hand you will acknowledge that it takes men of education to fill an able place in our legislative bodies where laws are made, and one who has studied law is particularly adapted for the position. Again, where do the country boys who get an education go? Do they all stay on the farms?

If a young man attends a college of letters, arts or sciences, he generally enters one of the professions. If he takes a course in a business college he enters into mercantile life; a medical college, he becomes a doctor; if he studies dentistry, his vocation thereafter is filling and extracting teeth. Why, even let a boy attend the district school until he can pass a county examination, and he will spend more time in teaching than in working on a farm. Many a boy does not get even the benefit of our common schools. When he becomes old enough to help on the farm, instead of starting him to school at the beginning of the fall term, he is kept at home until the wheat is in, corn husked, and fall work generally done; by this time he has lost two or three months of school besides in a measure his interest. Then in the spring he must stay at home to help get in the crops. Two or three years like this and the boy leaves school entirely. He can read, write, and spell after a fashion, knows a little about mathematics, less about geography and nothing about grammar, and his father will say in after years: "Tom might have gone to school longer, but he would rather stay at home and work"; when the truth is, nine times out of ten, if he had been sent to school every day he would have retained his interest by keeping up with his classes and acquired the foundation on which he could build a higher education that would qualify him to take his place among those who legislate for us, had he the wish and opportunity. Abraham Lincoln never went to college, but he made such thorough use of every chance he could find to educate himself that he not only gained the highest place our country could give him, but was well able to fill it. We are not all Lincolns, but the most of us can do *better* than we are doing with our talents and opportunities.

There are those who wonder why a girl is sent away to school or taught music or elocution. "What's the use?" they say; "she will only get married." Then for that reason, if no other, she is the one to receive all the knowledge she can; for if those who are to be fathers and mothers are at their best, then may mankind make greater strides in the eternal law of progress. Many an eminent man has ascribed his success in life to the teachings of an intelligent mother.

Man has not reached his highest plane yet, but when we compare our times with different epochs in the world's history, when we compare the spirit in which the captain of one of our battle-ships said to his men when the Spanish vessel struck its color: "Don't cheer, boys; they're dying," with the warfare of even recent times, we feel that in our day man has taken a long step upward.

Again, the farming class has been represented as a misused, down-trodden people. Now, discontent is a good thing if it stirs within us the desire to do our best in every way; but if it only incites us to tear down what we can not replace by something better, then away with it; it is anarchy — the same spirit that has assassinated rulers and law abiders in all nations. As farming is the occupation we have chosen, or that which has fallen to our lot, let us be optimists and see the many, many pleasant things connected with it. Our vegetables are fresh, our meat, lard, butter and milk are what they claim to be; we have cream instead of milk for our tables; we have horses to drive, which people of the same means in a city could not afford; we have the beauty of landscape, the glory of the morning sky and its beautiful sunsets, and if we but notice their grandeur we shall say with reverence: "The lines have fallen unto me in pleasant places. Yea! I have a goodly heritage." The farmer has, too, an independence, aside from producing his own food, which he can appreciate in campaign times, for politics are of interest to most men; he has the independence which enables him to express his views. Business or professional men who depend upon public patronage are wont to keep very still about politics, which is as well probably, but one feels better to be able to express his enthusiasm sometimes. Ministers soon bring down the wrath of some of their parishioners upon their heads, if they support openly either the Democratic or Republican candidate. I believe they are allowed to say that they are Prohibitionists. The farmer or his family does not have to be seen at every church social, or belong to all the neighborhood clubs and organizations for fear some one may be offended.

To be at our best we must be honest, moral, religious citizens. We frequently see the words "the honest farmer." What a grand thing it would be were this true in every case. It would then be better for all men to cultivate the soil for a livelihood. It is an error to hold any one class of men as just or unjust. Humanity is much alike the world over. Rich and poor, lawyers, doctors, preachers, farmers, all have good and bad among them, but with pride we can say that there are very many upright men among the farmers.

It would be a great step toward the betterment of this world's morals if the boys were trained as carefully as the girls. Teach them modesty and purity — it is as becoming to one sex as the other. Let Frances Willard's beautiful words "A white life for two" be the guiding star of the parents, and remember that the only true way to teach is by example. Were there less time spent around stores and shops, gossiping, which men can do as well as women, there would be more time and money for true recreation, which is needed by all, both young and old, and less time and inclination to grumble. Then let us not leave the world as we find it, but make it richer by the influence of a good life, and then shall we have faith in each other and faith in God.

"I know as my life grows older,
And mine eyes have clearer sight,
That under each rank wrong somewhere
There lies the root of right;
That each sorrow has its purpose.
By the sorrowing oft unguessed;
But as sure as the sun brings morning
'Tis for us to do our best.

"I know that each sinful action,
As sure as the night brings shade,
Is somewhere sometime punished,
Though the hour be long delayed;
I know that the soul is aided
Sometimes by the heart's unrest,
And to grow means often to suffer,
God asks we should do our best.

"I know there are no errors
In the great eternal plan,
And all things work together
For the final good of man.
And I pray, as my soul speeds onward
In its grand eternal quest,
I can say, when I reach those mansions:
'Father, I've done my best.'"

THE TWENTIETH CENTURY MAN.

By Mrs. A. J. French, Wakeman, O.

[Read at the Farmers' Institute held at Berlin Heights, Erie County, February 13 and 14, 1899.]

I suppose that there is not a prouder nation on the globe today than the United States.

We are proud of our great country, and of its unlimited resources, we are proud of our navy and of its brilliant achievements, we are proud of our army and of its faithful service, we are proud of our president and of his sagacious wisdom, we are proud of our congress, our great institutions and our philanthropy, and as the factors which go to make up this great nation we are proud of ourselves.

We have accomplished a great undertaking, we have done a great deed, we have caused the nations of the earth to stand and stare at us in wonder and amazement, and finally as we grasped the trophies of our conquest, we have listened to their loud applause and we smile at ourselves very complacently.

We have cleared up our neighbor's patch of thistles and we have done it well, but the recent Indian outbreak in the Northwest, the prolonged and continuous Negro troubles in the South, and the cesspools of corruption, vice and anarchy in all our large cities today remind the sober-minded, as they look over our own broad acres and see among the flowers of our prosperity these noxious weeds of dissension springing up, that a clearing up of our own dooryards might not come amiss and might save us future serious trouble. There may be food for thought in the purported telephonic conversation recently described in the daily paper in which the Sultan of Turkey is represented as calling up the royal palace at Madrid.

"Is this the Queen Regent of Spain?"

"Yes; what is it?"

"I am the Sultan of Turkey. Let us form a concert of powers and hasten to the rescue of the poor Negroes of North Carolina before they are all massacred.'

While we gaze with horror at the blood-stained garments of Spain and Turkey, it may not hurt us to remember that the robes of our own fair Goddess of Liberty may not be as white as snow, and that from our land of boasted freedom, of highest civilization and of universal brotherhood better things are due.

The twentieth century must solve some serious problems, must right some grievous wrongs, and in view of our country's new responsibilities and new duties, in view of the ever-widening possibilities for usefulness, which the events of the past year foretell for the twentieth century, the call for men comes today with more imperative voice than ever before.

It would be useless speculation for me to try to picture for you today what the twentieth century man will be or to portray some imaginary creature of exceptional powers or great achievements. Men always have been and probably always will be pretty much the same the world over; some great, some small, some very good, some very bad and mostly, as Samanthy Allen would put it, "mejum." And so, not what the twentieth century man will be, but what he should be, to be of the highest value to the age in which he will live, is my theme today.

We need not be told of the fact, for everything about us is constantly reminding us, that times and conditions have in the past few years materially changed and that brains more than muscle move the world today, and more and more will this be true in the years to come. Not many years ago the muscle of man and beast cleared the unbroken forest, hewed out the humble homes, transported the country's merchandise, carried its mail and produced its living; but the brains of such men as Robert Fulton, Benjamin Franklin and Thomas Edison have changed all this. "But," you say, "I was not born with the brains of an Edison, a Franklin or any other exceptionally great man, but belong with the most of mankind to the 'mejum' class." Yes; but there is not a part of the human body which will grow and develop so rapidly with constant use as will a man's brains, and so, young man, if you want to be of use in the world use your brains. The world today judges a man largely by his commercial value and the man who can furnish the largest amount of brain power not only attains financial success, but the world stands ready to bestow upon him position and power, while the ignorant day laborer who works with shovel and pick gets but his dollar and a half. He sees the vast difference and wonders why. Brains!

Do not be afraid of hard work with body or mind; it is easier to work than to be idle when once you get firmly fixed in the habit; you know it is hard to break an old habit. We always have to pay for what we get in this world. Genius to most men means industry. You may find a few people who have that rare faculty, genius, who can accomplish anything without work, who can learn without study, be eloquent without preparation and who seemingly acquire wealth, position and fame with no effort on their part. Such a man may exist, but he is very rare, and we notice that the men who stand highest in the political, commercial and professional world today are the men who are distinguished for sound judgment and close application to business, rather than for genius. Good luck is good management, hard work and economy, and you will never find success on the bargain counter.

The day after Charles Pratt, the founder of Pratt Institute, Brooklyn, died, there were found on his desk a few pages of an unfinished article written for a popular magazine, in which he says: "The education of a young man or woman is, in a few words, embraced in the power of habit. Every young person needs to learn the power of attention, the value of industry, promptitude in beginning work, method, accuracy and dispatch in carrying it out, courage before difficulties, self-denial, self-control and temperance; these are the primary qualities and the fundamental rules for success in life."

I once heard a very popular and successful minister speak regretfully of the fact that when he was a boy he never had the opportunity to learn to skate, for out of school hours there was always work for him to do. Said he: "While the other boys skated I was cutting wood for the three stoves that warmed the little Home Missionary parsonage out on the Illinois prairie." The other boys skated and he learned habits of industry which have grown to be a part of his nature and to which he largely owes his success.

It was a long and weedy row from which the boy looked up with wishful eyes and said: "Pa, don't you think the fish would just bite good today?"

"Hoe away, my boy, and they won't bite you," came the unsympathetic reply. We have always cherished a grain of resentment for that stern father's industry, and of sympathy for the tired boy, for what is there that comes to us brightening the dullness and monotony of our busy lives as does the memory of the happy, idle, childhood days, when we sat beneath the overhanging branches of some stately elm and watched the minnows darting to and fro deep in the waters of some shady pool, or, barefoot, we built our mimic dams and water-wheels, and life seemed one long, merry, play day. Still it is the boy who "hoes away" that gathers the grain in life's great harvest, while idle fishermen bewail their own hard luck.

When we were children in school there used to be a copy in our writingbook which read: "Be good and you will be happy," and all down the long page we wrote over and over again the words: "Be good and you will be happy," and just about so long as the ink was wet from our scratching, spattering pens, we were trying hard to follow the copy's good advice and obtain the promised reward. But I never yet saw an active, healthy, restless boy, who could be good for many minutes without something to be good about. "Be busy and you will be good" might be a useful substitute for the old time maxim. Boys are so constructed, and men are only boys of larger growth, that goodness and idleness will never thrive together.

The world wants not merely good young men, but young men good for something; there are so many of these good, clever fellows in this world who do not really amount to anything, good enough perhaps but good for nothing; men who simply exist, who have no influence in the community in which they live, and, when their lamp of life goes out, whom nobody misses and the world seems none the better or the worse for their having been in it.

There are so many men who possess all the negative virtues. They are kind and obliging and as meek and patient as Moses and Job; they know that wrong is wrong and that evil is evil, but they pat you on the back and say, "Let it alone, my boy, and it won't hurt you." They are sadly deficient in force, energy and grit and the active, hustling, twentieth century is not going to have very much use for that kind of men. The world wants men with backbone straight enough and strong enough to hold their heads too level and firm to be turned by every wave of public opinion, by every word of flattery, or prospect of political power or petty office; men who, seeing a wrong, will right it and knowing a thing to be evil will fight it with all the energy of body and mind. The world has had and now has many such men. While they live we call them cranks; when they die we bury them in flowers and praises, and erect tall monuments to their memory.

"God never made man to be trodden under foot": he was created to rule, commanded to have dominion, and the best subject given him upon which to exercise his God-given power, and also the subject of his most dismal failures, is himself. The world always respects the man of perfect self-control, the man of clean habits and a pure life, and to the boy who thinks it manly to smoke, to swear, to drink, I can only say, do not, then, try to be manly; let such manly traits die with this generation.

The nineteenth century is almost dead. May its vices die with it! The twentieth century is yours: take possession of the new age and have dominion. Be honest, not merely legally honest — our greatest national crime is legal, and a shrewd, intelligent lawyer can prove that black is white any day — but so honest that when you look into your own life where no one else can see you will find therein no secret crookedness; to be sharp at the expense of your honest self-esteem never pays.

The tendency of the present generation toward a useless extravagance in our ways of living, is a tendency which threatens to impede our progress and bring disaster upon us as individuals, and as a commonwealth we have almost lost the word economy from our vocabulary. When a young man is brave enough to practice that rare virtue we call him stingy, and society is largely to blame for the fact that the young man who spends his money for carriages and hothouse roses is a little more popular than he who is saving for a more worthy purpose.

There are too many young men like the lazy but ambitious youth who, when asked if he did not wish to live for a noble cause and departing leave footprints on the sands of time, replied that he preferred to leave carriage ruts.

Be firm, stand by your honest convictions. Some one has said that the difference between firmness and obstinacy, was merely a matter of sex. Granting then this insinuation, I say, be sure you are right and then be as obstinate as a woman. It is the obstinate regiment, the regiment that will not retreat, that wins the battle.

Be independent; the boy who relies upon himself succeeds, and though he sometimes fails, the lesson of self-reliance well learned is worth the cost of many failures. Be punctual, be prompt, be polite. While manners it is true do not make the man, they very largely make the world's opinion of him. Be strong, be brave, be true, be manly.

The nineteenth century leaves to you unlimited opportunities: a free land, wise laws and unequaled advantages to acquire wealth, education, position, power and all that is best in life. May you prove yourself worthy of your inheritance.

EMERGENCIES.

By **Dr. G. W. Wire**, Wilmington, O.

Read at the Farmers' Institute held at Wilmington, Clinton County, February 27 and 28, 1899.]

It does not require the eye of a Newton, or the brain of a Bacon, to discover that self-reliance and self-possession are important elements of success. Nothing under the sun will cause people to believe in and rely on you more readily and permanently than to see that you believe in and rely on yourself. Do not entirely ignore the fashions of the day. A due regard for the customs prevailing around you will show your good sense and discretion. Even though the prevailing style borders on the absurd or extravagant, it may still be wise to conform to a limited degree. Young says:

"Though wrong the mode, more sense is shown
In wearing other's follies than your own."

While this to a certain extent is true, still you should beware of extraneous pursuits and a multiplicity of callings.

You will find that intellect, genius, temperance, correct personal habits and other excellent qualities will all fail to make you successful unless you add ambition and aggressiveness to them. It is not necessary to be arrogant; it is not necessary to be self-conceited. But it is necessary to cultivate the power of thinking in the midst of excitement and distracting forces, and study to hide your doubts, hesitations, uncertainties, self-distrust and apprehensions as completely as possible, in order that you may be able to meet the emergencies on the farm, varied and various as they are.

"The wise and brave conquer difficulties by daring to attempt them; sloth and timidity shiver and sink at sight of toil and hazard, and make the impossibility they fear." He is most free from danger who, even when safe, is on his guard. The most skillful physician may, and often does, get results that he deplores, but with every care is powerless to prevent. Do not attempt to grasp more than you can hold, but whatever you undertake as a farmer should be pressed with manly determination and methodic effort until accomplished. Never cut and cover.

Aim earnestly to please your help on the farm, bearing in mind that a man is something more than an animal machine, a mere stomach and body. Constantly study the use of psychological aids, and encourage him to breathe the air charged with the spirit:

'Together let us beat this ample field,
Try what the open, what the covert yield,"

thereby avoiding the emergency of getting a new supply of hands to finish a heavy harvest. Be especially careful to keep your fence corners and your side of the pike clear of weeds, and thereby avoid the emergency of the law through the supervisor. Drill deep wells and get an ample supply of water free from typhoid bacilli and other impurities. When the dry season approaches, the weather is generally hot, or recently has been. The long continued heat of summer is debilitating to the digestive organs, thus increasing the susceptibility to disease. The decomposing animal and vegetable matter gain access to the dug wells, through surface drainage during wet weather, but not so with drilled wells. The tendency of such matter is to gradually accumulate by gravitation at the bottom of the surface well, and in the low stage you pump it out in sufficient quantities to give rise to various forms of stomach and intestinal derangements, to say nothing of the specific germ of typhoid fever and other poisonous bacteria, to which source such ailments have been traced. Drill all the wells necessary to supply every animal on the farm, including your family. Erect windmills to keep a constant supply of water and save labor. The well and mill are money makers, better than a ten per cent. investment. The cattle will grow faster, and take on more pounds in less time; the hogs are less liable to the cholera, and the horses will look better and get along with less feed if they have an abundant supply of pure water in the dry season. If there is any question about the quality or quantity of water from surface wells, boil the water for house purposes, as that is the only cheap and safe way to render impurities inert. Besides the drilled well and mill being a money maker and labor saver, you have averted the emergency of sending for the family physician to treat the ailments caused by impure water.

From what I learned of the committee, the special purpose of this paper is to assist you by suggestion in knowing more about what to do in accidental emergencies, that will be of service to your fellowman while you are awaiting the arrival of a physician.

While out in the sun, should one be overcome by heat, ordinarily called sunstroke, as soon as discovered, take the patient at once to the nearest cool and shady place, put the body in the recumbent position, apply ice to the head and sponge the body freely and frequently with cold water. If the patient be profoundly unconscious, remove the clothes, envelope the body in a sheet and sprinkle the entire surface with a can of cold water every five minutes until the bodily temperature cools to a reasonable degree. In such cases do not give stimulants, unless there is a weak heart action.

To control hemorrhage from an incised or contused wound, place the wound, if possible, above the level of the heart. If it be a leg or arm, the bleeding profuse, and from an artery, tie a cord above the wound reasonably tight. If the hemorrhage be not so profuse as to require the cord, but from a cut in the flesh, then a compress and bandage with the edges of the wound well together will generally be successful.

If you have a broken leg or arm with deformity of the parts, make extension from foot or hand until the deformity disappears, then place the injured member on a smooth surface and await the arrival of the surgeon. If the fracture should be a compound one, where the bone protrudes through the flesh, then by extension as in the other case, try to make the bone resume its natural place so that it will not be exposed to the air, and thereby aid in keeping up a good circulation In addition cover the opening in the flesh with cloths wrung out of hot water, and change them every ten minutes until the permanent dressings are put on by a competent attendant.

Should a person receive enough force by a fall or otherwise to render a degree of unconsciousness and embarrass the heart or lungs, place the patient on his back, loosen all tight clothing and apply cloths wrung out of hot mustard water over heart, lungs and stomach until reaction is established. In cases of hemorrhage from the lungs, place the patient in bed with head and shoulders slightly elevated and put two teaspoonfuls of table salt in half a glass of water, and give one tablespoonful every five or ten minutes until the hemorrhage ceases, or until more potent remedies can be brought to bear. In epistaxis, or nose-bleed, while this is often more beneficial than harmful, if too profuse catch the nostrils with thumb and finger and make firm compression for a considerable length of time, which will generally be successful by being quiet, either sitting up or lying in bed.

You will occasionally meet with a case of defective heart action threatening life. In such cases, you can be of great service by applying a mustard draft over the heart and stomach and giving stimulants freely and keeping the patient lying quietly.

Poisoning may occur accidentally or with suicidal intent. If poisoned with acids corrosive in character give chalk, magnesia or carbonate of soda in large doses and follow with copious draughts of water until medical aid with the necessary antidotes can be obtained. If it be tincture of aconite, give an emetic, and a very reliable and prompt one would be one-half a glass of hot water with a tablespoonful of mustard seed. Repeat the dose every five minutes until free vomiting is produced. If too much camphor, give an emetic as before suggested, and apply warmth to the surface. When too much arsenic is taken, empty the stomach at once, give mucilaginous drinks and carbonate of soda or common tincture of iron. In case of poisoning by food, such as shell fish, cheese, stale fish, or tainted meats, empty the stomach at once and give a saline purgative. For iodine, empty the stomach and give starch water freely. In case of insect bites, apply ammonia. For mosquito and flea bites, an application of soap or any mild alkali. In cases of stings by bees or hornets, a mixture of two parts of camphor to one of laudanum locally applied will give relief. When contact with the poison ivy gives rise to local poisoning a strong solution of sugar of lead, copperas water, or two drachms of nitric acid to eight ounces of water applied thoroughly every two or three hours will generally effect a cure in a few days. Burns and scalds may be temporarily relieved by the application of a paste made from soda with water or milk and covered with cloths, oiled silk or rubber to exclude the air. From either poisons or accidents you may meet with a degree of exhaustion demanding an alcoholic stimulant, but as none of you are supposed to keep that article on hand I will prescribe — pepper.

We cannot all be farmers, neither can we all be physicians, or follow any other one calling; but we can help one another. In my relations to the people as a physician for about twenty-three years, I have had abundant opportunity to study all classes, and I have arrived at the conclusion that the happiest man, the most easy going, with the least friction and worry, is the man with a small farm, out of debt, and not trying to buy all that joins him. He works hard, if successful, I know. But his weariness is more of the body than of the mind, and when he lies down at night, he goes to sleep and gets up in the morning refreshed and strong for the duties of the day.

Now, there is one other emergency — temptation. It crosses the path of every young man. The remedy is: Keep clear of all bad habits, pay your debts, shun professional politics, electioneering schemes and tactics; for politics, even when honorably pursued, are generally ruinous to a young man's prospects whether he be a farmer or otherwise. Later in life, when his habits and reputation are more secure, they will even then militate against him, although they may not necessarily ruin him. If the best of good politics injure thus, how much worse is it to be drawn into the pool of partisan politics, at ward rallies and barroom conferences, or into the demagogism and wire pulling and slate making at primary meetings, conventions, etc., with "the b'hoys!" No! No! Thrice no!

You can in the long run make ten friends and ten dollars by being no man's man and sticking to your farming, while you are making one of either in the polluted and polluting waters of party politics, and scrambing for office with those who belong to the party chiefly to struggle for its loaves and fishes; besides escaping many anxious hours and bitter disappointments.

Now, in conclusion, we must not forget that emergencies have some good results, for they figure in the history of the world and individuals. Slavery and politics created emergencies that put Lincoln in the White House. The blockade at New Orleans and Mobile Bay called for the bravery of a Farragut. History and fame were made instantly by a man then comparatively unknown when the emergency arose by the act of Booth, the assassin, and the mob was quelled in New York by that famous expression: "God reigns and the government at Washington still lives." In more recent times the emergency created by the Spanish-American war brought the immortal Dewey to the front and well did he meet the necessity.

"Who does the best his circumstance allows
Does well, acts nobly, angels could no more."

PROCEEDINGS

OF THE

STATE FARMERS' INSTITUTE,

Held in the House of Representatives, State House, Columbus, Ohio, Tuesday and Wednesday, January 10 and 11, 1899.

The State Farmers' Institute for the year 1899 met in annual convention in the House of Representatives, Columbus, Ohio, Tuesday, January 10, 1899, at 10 o'clock A. M.

In calling the Institute to order, Hon. Wells W. Miller, Secretary of the Ohio State Board of Agriculture, said:

GENTLEMEN: — In behalf of the State Board of Agriculture, I bid you all welcome to your own, The State Farmers' Institute. The State Farmers' Institute has been of great advantage and of great interest in the past and I am assured that this meeting will be no exception to the rule for the past few years. Your President, Mr. George E. Scott, is ill and unable to attend. He notified me by telegraph yesterday and by a letter received this morning of that fact. We have therefore drafted into service the Vice-President, Mr. John Begg, whom I now have the pleasure of introducing to you as your presiding officer.

Mr. Begg then said: Gentlemen of the Institute, our friend, your President, Mr. Scott, has sent his address to the secretary, which I will now read to you, instead of making one of my own.

The following address by President George E. Scott was then read:

ADDRESS OF THE PRESIDENT.

I am pleased this morning to welcome so many of the farmers of Ohio, along with quite a number of the State Institute force, at this the opening session of our State Farmers' Institute.

It is with gratitude that I accept, through your committee, the dignified position of presiding officer over the deliberations of this body during its several sessions, and hope to enjoy your hearty coöperation in making it the best Institute yet held in the capital city.

We have gathered here at the call of our State Board of Agriculture to listen to the discussions of various topics consigned to the best talent in the state through the courtesy of our honored and competent Secretary, whose program lies before us as a model of uniqueness and breadth of thought.

Beside those who occupy a place upon the program, we see the familiar faces of many whom we have met at the institutes and elsewhere over the state, and recognize among them farmers of ability and representative men of their localities. We are glad to have you present and hope to hear from you in the discussions that shall follow the papers read here upon the different subjects placed upon the program.

One year has swiftly passed since this body assembled in this city, truly it has been an eventful one, full of great deeds that have made it famous in the history of the nation. From the lashing tides of the Atlantic to the rippling crests of the billows of the Pacific, nature has smiled upon the husbandman; with him there has been a sowing and a reaping. Our own state though short in area and population, but second to none in results, has been honored and blessed with a wonderful harvest. While nature, through her bounteous resources, has provided well on her part, other factors of interest have been silently at work to produce magnificent results. The latent forces of the soil, through scientific rotation of cropping and cultivation of manures, have responded to the farmer who has studied his soil and its environments. The farmers' institutes for nearly two decades have contributed to develop more liberally the resources of our Ohio soils than we have yet conceived, thanks be to those who have builded so well through past years. Though work has been aggressive and earnest with an expressive measure of bountiful results, the tide turns from the broader avenues of thought into the deeper channels of actual and individual experience. This year the clamor for more institutes has brought the number up to the high-water mark of two hundred and fifty, with yet a large number of applications unsatisfied. The interest in most cases not only remains at par, but at a premium. The size of the audiences is measured by the capacity of the halls obtainable for the holding of them. Without doubt, the organization of these institutes has worked into agriculture a leaven that in this, the last year of the nineteenth century, has created a revolution in agricultural circles that will pulsate in the coming century as new blood in the generation that is to follow us. The younger generation has been and is seeking the educational improvements of our public universities, but the farmers' institutes have carried the knowledge of scientific farming to the very threshold of the farmer's home and taught him how to better serve the inheritance of his acres.

What are the results? They are legion. Many a farmer who once looked with suspicion upon the work of the state lecturer, now sees that while he can read, and to an extent philosophize, he cannot extract from abstract teachings what he needs for a perfect practice. What the farmer needs is the friendly service of some one who has the skill to analyze for him in detail the important connecting links that can aid him to complete a chain of practical knowledge. Never in the history of these institutes has this class of work been fraught with such importance as today. It is not so much a high order of science that the institute goer wants or needs, but the ability to apply what he has learned in the simplest and easiest form. From the simplest ideas in the early work the growth of our Ohio institutes in number has demanded a higher order of teaching intellect, which has surely reached a plane not known before in the history of the work. To abandon this magnificent field of labor would be on the part of the state truly a cowardly retreat, with the hardest problems of farm improvement yet unsolved, leaving the student of the farm perhaps helpless to lift himself to the altitude of success that a continuation of the work surely promises. Those who have been earnest in an effort to spread the influence of this grand work have been truly benefactors in a hundred ways. The people of Ohio have already risen up in majesty and called them blessed, and are ready at all times to receive them with open arms and warm hearts. For fourteen years the speaker has occupied the secretary's chair of one of these institutes. It may be called a representative institute and we can truthfully say that it has been a success every year and our people would rebel against any influence that would rob us of the benefit of an organized system of public benefits equal to this.

But we must be brief, and in conclusion would say that the New Year brings with it a promise of prosperity and peace, while our garners are overflowing with plenty, resulting in a flow of gold into our coffers that has put energy into the heart of the farmer, sustaining him in faith and trust for a prosperous future. We are a nation of farmers with resources so great that even in times of war we can feed the hungry, provide for the famishing among our enemies, yet live like princes within our own gates. With the recognition that we hold within our keeping the granaries of the world we may prepare to become a still greater nation.

At the conclusion of the address, President Begg said:

Gentlemen of the Institute, we will now proceed with the program as outlined. We have a great industry in this country in the growing of apples and the cultivation and the care of the apple orchard is of interest to every person in this State. We have with us this morning a gentleman who can talk intelligently upon this subject and I now take great pleasure in introducing to you at this time, Professor W. J. Green of the Ohio Agricultural Experiment Station who will discuss the topic:

THE FUTURE OF THE APPLE ORCHARD

By Prof. W. J. Green, Wooster, O.

In trying to forecast the future of the apple orchard my mind reverts irresistibly to the past. One orchard, in particular, crowds itself on my memory and this is the type of many others well known in the past, nor is the class yet extinct. It is the old orchard back of the barn where the lambs frisked in the early spring, in the "season between hay and grass"; where we children chased the calves and little pigs, and where the "horned patriarch of the flock" sometimes chased us. This old orchard was primarily a calf pasture; cattle and horses had no place in it; sheep and hogs on special occasions, but the hogs were civilized hogs, not by nature, but because they had rings in their noses. The grassy turf was almost like a lawn. The trees were full of vigor, some reaching skyward beyond the length of any ladder, but the fruit they bore did not need careful handling to get it to the cider mill. A few had been despoiled and subdued by the artful grafter. There were Greenings and Gates, Rambos, Golden Sweets and Harvest apples enough for the family, and sometimes a surplus for market, while cider apples were never lacking.

The trees gave shade to the calves and did not destroy the pasture. The calves grew into fat steers and sleek cows. These brought cash and the pigs and lambs added their quota also. Very naturally there was an abundance of good feeling toward the old orchard.

The children loved it, for there was always life, animation and companionship there. The elders prized it because of the steady income which it yielded, both directly and indirectly, nor did they begrudge it a year's rest after it had yielded a bountiful harvest, for it never entirely lost its usefulness even in the "off" years. If its only mission had been to bear apples for market there might have been reason to complain both as to the quantity and quality of the fruit. It was like a general purpose animal, if it could not do one thing well it could do several things indifferently, and because it had so many uses it was indispensable. In former days the general purpose cow, or horse, or machine, were looked upon with more favor than now. The cow that could make a moderate amount of butter and had a good carcass for beef was considered to be more valuable than one good for butter alone, even though she was far above the average in this respect. There are still some, who, as John Gould pithily puts it, "would keep an indifferent butter cow, simply because she would sell for beef at the administrator's sale."

One can imagine why a Frenchman would choose a general purpose horse for a family beast, for he could drive it to the carriage for a score of years and then make French beef of it.

Even the general purpose man is not wanted as much as he used to be. We may admire versatility, but the market for skilled labor quotes versatility at a low rate. The man, the animal, the machine which can do one thing, and do it well, is wanted nowadays. So far as the man is concerned this tendency seems almost deplorable, but the tiller of the soil is not becoming specialized to a dangerous degree. There is still opportunity for him to exercise all of his endowments and yet he, too, is becoming a specialist on a broad basis.

But the orchard, the general purpose orchard, are its days numbered? I think not, unless tuberculosis removes the necessity of a calf pasture.

As long as the orchard back of the barn is so very convenient it will remain. There is no reason why it should not. It still has a mission, but if any one supposes that it can fulfill all the requirements of a modern orchard then he must be one of those who believes that a horse can pull a plow one day and take first money at the race course the next, or that a cow can give eight thousand pounds of milk in a year and successfully compete in the fat stock show.

The commercial apple orchard of the future is to be like the specialized animal; it must be for one purpose mainly and brought up to the highest point of excellence in that particular. The general purpose orchard may remain on most farms, but it will not supply the market with any considerable quantity of fruit. The commercial orchard alone can meet the exacting demands of the city markets. I may as well at once answer the question implied in the topic, "Has the apple orchard a future?"

I think the apple orchard in Ohio has a future. Are diseases and insects to gain control and western competition to complete the destruction of Ohio apple orchards? I say no. The Ohio man has always been equal to the occasion, and he is not going to fail in orcharding any more than he is in other branches of farming. When the Ohio man gives up and says that he can no longer grow corn and wheat, beef or mutton; when he is ready to acknowledge that some one else is smarter than he, then it will be time to talk about leaving apple growing to some one else, in another state, who knows how better than the Ohio man. Of course the Ohio man has done some foolish things. He tried to make butter out of one side of the milk and cheese out of the other, while the New Yorker quietly took the market away from him and refuses to give it back. He deluded himself into the belief that his calf pasture was an orchard, and has further deceived himself into believing that fungi and worms must be endured for he has become convinced that they cannot be cured. The fruit of orchards from other states is put into his markets, and he has about come to the conclusion that there is something providential in the way things are parceled out.

The Ohio man is not a unit on this question, however. Some believe that apples may still be grown in the state to compete with the world, in our own markets at least. If I can tell how this can be done it will be to give an idea of what the future of the apple orchard may be. Commercially, the general purpose orchard will be an insignificant factor in the future. It may without much care supply the family with fruit in favorable seasons, but it will fail more frequently than in the past, not only in the quantity but in the quality of product. The site of the future commercial orchard will be selected with great care, with reference both to soil and air drainage. Failure will not be invited by planting where soil drainage, either natural or artificial, cannot be secured, nor by selecting locations where fogs and frosts prevail. Given the right location for an orchard and the battle is half won. Nature has done her part so far, but as though repenting her over-indulgence she proceeds at once to send plagues and pestilences. There is the worm at the root, the worm at the top and another specially designed for the fruit. Diseases that will take the breath out of the leaves and the beautiful blush from the fruit. As though only half in earnest about her good work Nature made that elevated orchard site so dry that we must adopt measures to retain the moisture, or the fruit will be too small. If we leave Nature alone she will plant weeds and grass to pump the soil still dryer. A timothy sod that will give two tons of hay per acre will pump out of the soil, during the season, five inches of water, equal to more than four thousand barrels, of water per acre. This may be more water than falls during August and September when the apple crop is most in need of moisture. To replace this amount of water would require the time of a man and a team a full month, even though the haul was only one-fourth mile. To save moisture is one of the most important problems of orcharding at present. We cannot afford to divide the supply of food or moisture with either weeds or grass. The trees need it all and must have it for the best results. We know that cultivation saves moisture. A mulch on the surface of the soil prevents the wind and sun drying the soil. We need, however, to know a few things more specifically. First, as to early cultivation and its effects. It has been shown by experiment that soil left undisturbed in the spring lost in a single week the equivalent of a good soaking rain more than cultivated soil alongside. The loss of fifteen hundred barrels of water per acre, in a single week, is an incident not to be counted upon in successful orchard culture, when so simple a remedy as harrowing is at hand. Less than half a day's work of man and team will prevent much of the loss, but if the same man were set to work hauling water he could not put it on, in a drying time, as fast as the sun and wind would take it off. For practical irrigation a harrow beats a sprinkling cart ten to one. One other lesson the orchardist, as well as the farmer and gardener, needs to learn, and that is that a mere sprinkle of rain, and even a heavy dew, may dry the soil. Do not corn leaves roll up more the day after a slight shower, in a dry time, than they did before it rained? When the soil became very dry it nearly lost the power to draw up moisture from below, but the slight rainfall restored that power, or increased the soil's capillarity. In an experiment one-fourth of an inch of water, equal to about two hundred barrels per acre, was applied to the surface of dry soil. The next day there was present, in the upper layer of the soil, three times as much water as was applied. The extra quantity came from below, or as we might say, the capillarity of the soil was increased. This is well, you say, for if we can bring up water from below that is what we want to do. Yes, but look out for the sun and wind, for in a single day they may dissipate all of the rainfall, and the surplus from below as well, leaving the soil dryer than before.

The lesson belongs to the orchardist and all cultivators of the soil alike.

Does this mean constant cultivation of the soil of the orchard? It means precisely that, from first to last, from youth to old age. Does it mean that the sod in the old orchard is to be broken up and the ground kept clean? Not necessarily, for to do so might now work injury to it, besides it would spoil the calf pasture. The orchard that is to be cultivated is the new orchard. You can prune this orchard so as to admit of cultivation, and where the soil is kept stirred there is less danger of root injury than in the old orchard. Is not cultivation to be discontinued when the trees begin to bear? Perhaps so, and before if need be. If growth is too rampant and the trees forget their mission and refuse to bear they may need checking. To bend the limbs down, to peel the bark off the branches in midsummer, to bore holes in the trunks and fill with sulphur or various nostrums, to drive rusty nails into the trees, to mutilate the roots, to seed to grass; all have the same general effect, viz: to check growth and bring the trees to a sense of danger; then they will go to bearing in order to perpetuate the species. It is a law of nature that when life is threatened there will be an effort made to perpetuate the species, but in apple culture it is not well to carry the threat beyond a gentle reminder, else you will get more apples than you will know what to do with. This is literally true, for the number will be so large and the fruit so small as to have no value. Crops may be grown in the young orchard without harm as long as cropping is profitable. In the fall a cover crop of rye or crimson clover is beneficial and to do the most good it should be plowed under early in the spring before it has robbed the soil of too much moisture. The needs of the orchard must regulate what crops are to be grown to plow under. If the trees languish and appear to need nitrogen then clover, beans or peas will supply the element. To prevent washing and waste of fertility in winter, rye is as good as anything.

Are fertilizers needed? Yes, the orchard must have food. Taking the analyses of fruit, wood and leaves of apple trees as a basis, it can be shown that an orchard thirty-three years old has required during a bearing period of twenty years, its life food, which at fertilizer prices would cost six dollars per tree or two hundred and seven dollars per acre. We may discount this estimate heavily for generally no nitrogen need be bought, nor very much potash for clay soils. Cultivation makes plant food available and clover will help out with the nitrogen supply. After the trees begin to bear it will be well to apply wood ashes, bone meal, acid phosphate and muriate of potash in moderate quantities each year. Manure is not the best thing to use, but may be applied in certain cases to old orchards.

An easy way to fertilize an orchard which is in grass is to pasture enough sheep in it to keep the grass very short and then feed the sheep enough grain, especially bran, to make up for the lack of pasturage. This is better than mowing, as the grass does not draw heavily upon either moisture or fertility, while the sheep leave more of the latter than they take off. Hogs may be employed in the same manner, but they are not so useful in keeping down weeds. If allowed to root freely the orchard soon becomes unsightly and weedy, and the fallen apples cannot be utilized without washing. Hogs answer the same purpose as sheep in destroying wormy apples, but they are not so cleanly and their rooting is of less value than is commonly supposed. The mere fact that the soil is broken up by the hogs is not evidence of benefit to the orchard. To get the full benefit of the breaking up of the soil the work must be carried a step farther. The surface must be stirred frequently, as in cultivation, in order to conserve moisture, but as left by the hogs it is probable that the soil will dry out more quickly than if not disturbed at all. While it is true that sheep are better than hogs in an orchard it is, after all, largely a matter of convenience, or necessity, which shall be employed to keep the grass down and to eat the wormy fruit. No other kind of live stock than sheep and hogs can be of much service in an orchard, except calves and poultry, and they can do only a part of the work required. It is one thing to keep stock in the orchard for the benefit of the stock, and quite another to do so for the benefit of the orchard, but if the orchard is going to be made to pay, it must be given the first place in every transaction with it. An orchard may be used as a pasture for any kind of live stock, but in that case the owner must get his profit from the live stock and not from the orchard. Put the orchard first and it will give the profits.

It has come now to be understood and acknowledged by all authorities on orcharding that, given a good location, proper varieties, cultivation, fertilization, and all other necessary attention, unless insects and diseases are combatted the orchard will be little better than a failure. It does not need a prophet to foretell the necessity of the spray pump in the future. It has become, and will remain, a necessary part of the orchard outfit. Insects and diseases have periods of greater and lesser activity, but as long as uncared for orchards remain as nurseries for these pests there must be a constant warfare on the part of those who make fruit growing a business.

The orchardist of the future will not count upon wormy apples, and trees defoliated by the canker worm as an incident in his business. It is true that we have our neighbor's as well as our own codling moths to combat, and we often find it uphill work, but our efforts count for something and improved methods will come sooner or later. The canker worm is amenable to arsenic, rightly applied. The apple scab, which debilitates the foliage and disfigures the fruit, often causing an entire loss of crop, is the worst apple enemy of all. In the Bordeaux mixture we have a sure remedy and even should there be nothing better discovered we need not fear for the future.

The orchardist of the future will not delude himself with the notion that when rains come in blooming time and cold northeast winds after the apples are formed he must give up the battle. The battle will be fought and won before the blossoms come, and before the trees are fairly awakened in the spring. There is no theory about this; it is not a mere wild guess; it is founded upon facts which have learned by experiment.

It is a fact that the apple grower in this state has but little to fear from the climate. Given the proper location, and the requisite attention to details, there is but little reason to fear the cold of winter, or the frosts of spring, or the rains and winds of early summer. Nature now repudiates many of the charges which have been made against her. In case of some varieties we can now get two crops of apples where we could get but one ten years ago, and we can greatly increase the quantity and improve the quality of all.

It is not designed to give specific instructions in orchard management, in this paper, but simply to call attention to conditions under which the orchardist of the future must work, and to emphasize the fact that orcharding must be more specialized than in the past. The orchard of the future must be planned and managed according to scientific principles, and yet no two orchards can be managed alike. A rule in one case will have an important exception in another case, and certain foundation principles must determine whether the rule or the exception is to govern. To say that cultivation is needed in a particular orchard because it has benefitted another, or that spraying is unnecessary because it did no good in a certain case, is mere empiricism. Unless we know the reason why, and understand underlying principles, we cannot be sure that a certain course of treatment is applicable under other conditions. It has been the custom in the past to study methods of orcharding without much reference to the reasons for them, and in consequence there have been both successes and failures in following the same plans. There has been too much of telling how to do things and too little of explaining why. We are passing out of the empirical state, and in many respects we are entirely out and beyond it.

It is not too much to say that the orchard of the future, but indeed the orchard of today, may be managed according to scientific principles. Not many years ago we cultivated the soil to kill weeds, and a tool which did not cut and dig several inches deep was of no account, and often the weeds had to be turned under to get them out of sight. We stir the soil with a different purpose in view now, and knowing why to cultivate it is done in a different way. The expert orchardist of the future, knowing the effect of tillage, will be able to decide whether to stir the soil for a period of five, ten, or twenty years, or indefinitely. He will know his orchard just as well as the flock-master does his animals and be quite as able to anticipate its needs.

A few years ago spraying was a haphazard operation, resulting in failure not infrequently. We can now give a reason for many operations in this line that five years ago could not be explained, and it will not be long before we can be sure where and what we are hitting and save many a random shot. And thus we might enumerate regarding varieties, fertilizers, pruning and other operations, and show how much better equipped in knowledge we are than was the past generation. But we have just begun. Until the advent of grafting orcharding had made but little progress, and then for a long time stood almost still, but within a very few years the advance has been by leaps and bounds. There is too much momentum in the movement to stop soon.

The future is bright and yet there are clouds which are even now larger than a man's hand. In the southwest we see one in the shape of that everlasting omnipresent Ben Davis. What is to become of the millions of bushels of this variety from the thousands of acres now planted? That is a hard question to answer, but let us not forget the example of skim milk cheese in Ohio. "All of the people can be fooled some of the time, and some of the people all of the time, but it is hard to fool all of the people all of the time."

Skim milk cheese and Ben Davis apples are not what all of the people want all of the time. Ohio apples when well grown, as they will be in the future apple orchard, rank high in both beauty and quality. There is a good home market and there are plenty of good orchard sites in many parts of the state. We can compete with the world as well in apples as in other commodities. The conditions are just as favorable for the orchardist as for the grain or stock grower. The young man who fits himself for the task will find the apple orchard as safe an investment for his brains and money as can be offered to the next generation. When this is fully comprehended there need be no fears for the future of the apple orchard. It will be on a par as a financial investment with any or all operations in agriculture or horticulture.

President Begg: Ladies and Gentlemen, you are certainly to be congratulated on hearing a paper containing so much instruction upon so important a subject. A few minutes will now be given for discussion of the paper. Any one is at liberty to discuss it or to propound any pertinent questions he desires. I hope you will all be prompt.

Mr. R. G. Jefferson, Fayette County: Mr. President, I would like to ask when to spray apples?

Professor Green: I did not state that in my paper for the reasons therein made known. But the time to spray apples is early in the spring for fungus diseases before the trees begin to leaf out. To spray for insects I would say the time would be when you see them beginning to work.

Dr. W. I. Chamberlain, Summit County: That would not apply to the codling moth, would it?

Professor Green: That is so.

Mr. William Markel, Pickaway County: My advice has always been to the man who wanted to spray the orchard back of the barn, as it has been termed, or the home orchard, that it should be so planted that all the early apples should be separated in one corner of the orchard, or on one side, so that they can be fenced off to themselves. It is very often the case that the home orchard is not sprayed and taken care of like the commercial orchard. A great deal can be accomplished if the orchard is planted in this way by turning the pigs and the hogs into it to devour all apples that have any insects in them, and the insect pest can be kept down to a certain measure in this manner. But if you plant winter apples and summer apples together you cannot keep the hogs in the orchard long enough to take up the winter apples. I think this is one of the important points in putting out a home orchard. Of course when we put out commercial orchards and expect to get our money from the sale of apples we must spray, and we ought to spray for the home orchard. But when it is not done, or when it can not be done conveniently, there is a great advantage to be gained by planting the orchard as I have suggested.

Dr. Chamberlain: Mr. President, we long ago learned that when Professor Green gets up to say anything about orcharding there is not very much left to say when he is through. I wish I could believe in one statement that he made, and that is in spite of the rain and in spite of the frost we can have apples by spraying. I have perhaps one of the best locations in Ohio for natural drainage and for frost drainage, or air drainage as he calls it. It is over a high hill with a pretty sudden fall of one hundred or one hundred and thirty feet to Tinker's Creek, and the orchard is thoroughly tile drained two rods apart, one tile drain between each two rows of trees, but invariably when we get that drizzling, incessant rain all through the entire period of blooming so that the pollen seems to be washed off, I feel that no matter how much spraying I indulge in I can not get a large crop of good apples. A few years ago I sprayed no more than I did last year and this year — that is 1898, but in 1896 I had nearly six thousand bushels of apples with almost no wormy ones. Last year I had a few hundred bushels, and this year I had a few hundred. I was footing up the receipts from my orchard for 1898 and they only amounted to a little over two hundred dollars, yet I sprayed with absolutely as much care and thoroughness that year as I did in 1896, or in other years when I have had good crops. My theory has been, and it seems to be supported by all the facts in my own orchard, that when the pollen is so washed off that the apple can not be fertilized properly you are bound to get one-sided, imperfect apples; and that when a week follows, as the apples are just setting, with frost every night and the mercury down to 28 or 27, then these little apples fall off in spite of all the spraying you can do. And furthermore in a wet season, like the past one, when it rains all through the period when the codling moth is at work, almost every two or three days, and rains pretty heavily, I find that it is very difficult to keep the apples that are left from being wormy. There are not enough apples left for the worms and for the folks and the worms have the first whack at them. I wish I could believe the statement contained in Prof. Green's paper. Possibly with smaller trees and younger trees his statement may prove correct. Mine are twenty-five years old and the trees are very large, some being thirty feet high. If the the trees were smaller, where the spraying could be exceedingly thorough, the fact may exist as Professor Green states. But I doubt whether I can secure the results which he has suggested in my own orchard. I am going to try it more faithfully than ever. The paper was perfectly full of good, useful advice. Let anybody try to take notes of a paper of that kind and he finds that he has to take notes all the while and very rapidly. My conclusion is that we will print the whole paper if we can get it in the *Ohio Farmer* so that we can then all of us have a chance of reading it at our leisure and studying it.

Professor Green: Mr. President, I did not mean to give quite the impression that Dr. Chamberlain seems to have obtained. I merely tried to put the orchard on a par with other crops. That is, about the same as other crops. You can not expect a crop every year. I know the conditions that he speaks of often occur, and spraying will not prevent such things. But I said we had attributed such difficulties largely to the wrong cause and I think so still. I think my experiments bear me out in saying that a great measure of the difficulty is from fungus diseases rather than cold rains, and yet the cold rains will sometimes prevent the bees from working on the pollen and cause a loss of a crop. There is no doubt about that, and spraying will not prevent that difficulty.

President Begg: There are still a few minutes left for discussion on this topic.

Mr. Markel: Will Dr. Chamberlain please explain what advantage he would claim for his spraying in 1896 and also in the years following?

Dr. Chamberlain: In 1896, it is true that the year was so very favorable that even those who did not spray had fairly good fruit. But my fruit was almost absolutely free from all scab and from all codling moth, and I think the spraying had considerable to do with that.

Mr. N. C. Marion, Fairfield County: I would like to ask Dr. Chamberlain what his success is with the old, despised Ben Davis?

Dr. Chamberlain: Mr. Chairman, my own success — my remarkable success I might say — is in not getting within one hundred miles of the Ben Davis (laughter and applause). I absolutely think that the Ben Davis is the most serious menace to our apple growth. They shove them in on the market. They are too poor for insects to eat and too tough to rot. And when people have eaten one of them they never want to see another apple and hence they destroy the chance for good apples, not only by filling up the market with these greasy looking things, polished by the Italian fruit peddler's arm and they not only kill the market, but they destroy the belief in apples. I think the Ben Davis is simply an abominable apple.

Mr. Marion: I wish to ask Professor Green what variety of apples he would recommend that would be equal in appearance and productiveness to the Ben Davis?

Professor Green: What part of the State?

Mr. Marion: The southeastern part.

Professor Green: I would have to give it up, for the southern part of the State. But for the northern part of Ohio I would recommend the Baldwin and the Jonathan, and apples of that kind. For southeasten Ohio, I think the York Imperial and the Jonathan would come nearer than any others I could name. The York Imperial ought to be planted more in Ohio than it has been. In Pennsylvania, which has very nearly the same climatic conditions as Ohio, it has proven to be a most profitable apple, and wherever it has been planted in Ohio it is very profitable, and it ought to be one of the leading apples of the future. The Jonathan being top grafted, so far as I know, is good all over the state, but better in the north than in the south.

Mr. Marion: We grow the Ben Davis. That looks like rather a bold confession under such a scorching condemnation as has been made by Dr. Chamberlain. Yet I admit that we grow the Ben Davis, and we are going to continue growing the Ben Davis. I will give you my reasons. Nine-tenths of the people of Ohio buy apples by the eye and not by the taste. We can not educate the taste. We can not stop to educate the masses but we must give them what they want. We find by proper spraying and proper care the Ben Davis gives better assurances of a good crop than the other varieties named. We find that it is a ready seller in the market. Everybody knows what the Ben Davis is, and it is like the poor, it is always with us. It is always with us and there is in the market today no apple which is a better seller. You come into Columbus and you will find more Ben Davises on the market than any other apple. Why? Simply because they are fine looking apples and ready sellers. They have every characteristic necessary to the good apple except quality and that they have not (laughter). Go to the pastry cook and you will find the Ben Davis the only apple which is susceptible to any flavor he wants to give it. And to-day the Ben Davis in Baltimore is quoted higher than any other apple. So, in conclusion I would say, if a man wants to grow apples not for honor but for money he would better raise the Ben Davis (great applause).

Mr. Markel: I would like to inquire whether any one here has had any experience in growing the York Imperial, and if so how it is doing in the State of Ohio?

Mr. W. P. Hedges, Harrison County: In the southeastern part of Ohio, Harrison County, a neighbor of mine has it in fruiting and has had it for the last twenty-five years and he looks upon it as one of the best apples he grows. He has quite a large orchard and he looks upon the York Imperial as being one of the best varieties of the many varieties he grows.

Professor Wm. R. Lazenby, of the Ohio State University: Mr. President, there is one question in connection with commercial orcharding that has not been touched upon and it seems to me it is quite an important one. That is the question of improved method of distribution of the fruit. I agree with my friend, Professor Green, that it is not so difficult in many parts of Ohio to raise apples, and it is not difficult in many other sections of our country; but we know from experience, and especially the experience of 1896, that it is quite difficult to sell them when we have a good crop. Although there were thousands of bushels of good apples that rotted under the trees that year — under the trees that bore them — I find that in Columbus not one-tenth of the people had as much of this good wholesome fruit as they ought to have had. In other words, why do I, when I have to buy a few apples for my own use, have to pay in buying a small quantity at the rate of five or six dollars per barrel for rather indifferent fruit? Fruit for which the producer receives only perhaps one dollar and fifty cents or two dollars per barrel? Possibly the general introduction of the trolley car may improve this condition of affairs. At least I look upon that with very great hope indeed. It seems to me that is going to work to great advantage in bringing the producer and the consumer closer together, or at least a part of the consumers of this wholesome orchard product. If we pay the ordinary freights on our railroads the price is increased beyond all reason. I had some apples shipped me by the barrel from the east sometime ago and I was surprised when I came to pay the freight. I can see that the transportation of a product like the apple under our present conditions costs a good deal, but after the trolley car comes into general use it would seem as though it would bring products of this kind almost directly to the door of the consumer and at a very much lessened expense. I think in discussing the prospects of orcharding from a commercial standpoint these facts should be considered as well as the mere fact of how to produce the fruit. We want to look to the market end as well as to the other.

President Begg: Ladies and Gentlemen, the time has now arrived to close the discussion upon this topic. We will hear an address now by Dr. A .M. Bleile, Professor of Anatomy and Physiology of the Ohio State University.

BACTERIA.

By Dr. A. M. Bleile, Columbus, O.

Mr. President and Fellow Members of the State Farmers' Institute:— I have taken a subject this morning that may at first seem to have purely a technical and so-called scientific interest, without any practical interest. Notwithstanding that fact, I have volunteered to come before you with this subject, because what is purely theory today, what is of purely scientific interest today, becomes of the greatest practical interest tomorrow, and nowhere is this better shown than in tracing the history of bacteriology. A few years ago perhaps no one would have dreamed that it had or would have any practical application in agriculture, and yet today we find that the bacteriologist is beginning to be needed and will be needed more and more in agriculture. He is playing a role there just as he is in almost every other industry in life; and the time is at hand when a knowledge of these organisms is of the greatest practical importance and practical value. This, of course, is only in keeping with what has happened with other sciences in relation to agriculture. We find that as the art of agriculture develops it needs, as other arts do, the aid of other sciences, and there is a very close parallelism, to my mind, between agriculture and medicine. I see the time when he who wishes to be a successful farmer must have the same careful training and very much the same kind of training that the physician receives. He must have theory, he must have science and he must have practice just as the physician has before he can be a successful worker in his particular art. The time was when we would see sneers upon the faces of many farmers at the suggestion of "scientific farming." There was a little reason for those sneers, because the men who at one time posed for scientific farmers knew no science and certainly knew no farming, and as a matter of course would fail. But the union of the two, the union of science and practice probably needs no further affirmation.

Not to get too far off from my subject, I say I have taken the subject of "Bacteria," and I shall take the liberty of tracing the history of these organisms, because in tracing that history we shall find not only an interesting array of facts but also facts that are of very great importance and have become so through their later application.

We are wont to speak of bacteriology as a new science and of bacteria as organisms that have been very recently discovered, and yet that is not the fact. Bacteria were discovered a good many years ago; almost three hundred years ago. Away back in sixteen hundred and seventy-five a linen draper, a man of no scientific training, but a man who possessed the art of making magnifying glasses, made glasses of such perfection that he could first see these little organisms and his descriptions are the first ones in existence concerning bacteria. He saw them for the first time and described them very carefully and very minutely, so much so that his descriptions of some of the forms stand even today as very good descriptions. He called them, however, animalculæ, and to this day many persons speak of them as animalculæ, simply because many of these bacteria — not all of them, but many of them — have the power of motion. They move around at a lively rate, which is magnified of course under the glass, and we are wont to imagine that everything that has the power of motion must be an animal and cannot be a plant. That belief existed at that time and for a long time afterwards, and they were treated as animals and not as plants, which they really are. It is curious to note that at that time the theory which we now hold was suggested, namely that these animalculæ, as they were called, might produce disease. One physician set up a rather elaborate treatise on the subject, in which he maintained that each disease had a particular kind of animal of this class as its causative agent, but while he himself was convinced of this fact he found no credence whatever in his theory on the part of the rest of the world. He was simply laughed down and ridiculed and this view passed entirely out of sight. As a matter of fact bacteria excited no further attention except for a few years after their discovery until more modern times or until the end of the last century and the beginning of the present century; and right here we meet with the fact that what started as a purely speculative and non-practical discussion, and investigation, later led to results of the greatest practical value.

They were taken up again in connection with the study of spontaneous generation. At that time physiologists and theologians and scientists were debating the old, old question whether living beings could arise anew or could be created anew or could grow anew, as Topsy did, simply grow, not be born at all, or whether they had to spring from parent forms. Of course it was known that there was no spontaneous generation for any of the higher forms, but with reference to these bacteria it was held by one school that there certainly was, mainly because if a beef broth or vegetable matter of any kind is corked up and left to itself a while it will rot or putrify or undergo certain changes, and if examined under the microscope it will teem with myriads of our friends, the bacteria. That is true. It was thought that they formed another kind of organism, and it took a good many experiments and a good many heated arguments to clear up the question and to settle definitely the point. In fact, it was not fully settled until late into this century that these bacteria do not arise anew; that they do not grow or form in the fluid any more than do any of the higher plants or of the higher animals. That was a fact, as I say, which was brought out as a result of purely speculative thought. And yet we make use of this fact today in our practice, as I shall develop later on. Knowing that where bacteria are, we have had previous sources of bacteria, we know how to prevent the growth of bacteria, or we know how to propagate bacteria, if we wish so to propagate them. And very soon after this question was settled the practical application of the knowledge came to light through the works of Pasteur, of whom we have all, of course, heard. There was in a certain district in France a disease which was peculiar to the wine. Instead of undergoing normal fermentation which would make it a saleable article, it underwent a peculiar kind of fermentation which spoiled it and rendered it unfit for the market. Pasteur was called in to investigate the subject from a purely chemical standpoint, for he was a chemist and not a biologist. He found no reason for this spoiling or sickness of the wine so far as his chemical investigations were concerned, and he went off then on another tack as it were. He undertook the solution of the problem from a biological standpoint and he discovered then the bacteria. That was the first instance where the bacteria were shown to have any concern with the practical affairs of life. Soon after this discovery Pollender and Davaine discovered the bacteria in that form of cattle plague that we have heard of in various parts of this country, being that form of cattle fever that is spoken of as anthrax, which is quite prevalent in certain districts of Europe, I believe; and this marks the first discovery of bacteria as connected with disease. From that time on investigators multiplied and investigations of course multiplied very rapidly. But bacteria were studied merely in regard to their connection with disease, and in that way they have acquired a very bad reputation indeed. Most of us whenever we hear of bacteria feel like buttoning up our coats and turning up our coat collars and in other ways protecting ourselves against the invasions of these imps of Satan, and we invariably connect the idea of mischief with these bacteria. But we shall find later on that there are only a few black sheep in the family, that the family is very large and contains other good members, and that their reputation is simply spoiled by these comparatively few. Since the time when they were connected with disease, studies have widened out and we know now that they not only produce disease but that they do a great many other things in nature that are vastly more important perhaps if taken in a general way than the part they play in the production of disease.

To describe them a little more closely, they are, as I have already stated, not animals, not animalculæ, but they are plants. As I said, they were classed as animalculæ because many of them had the power of motion, for we still count this power of motion as a necessary attribute of animals and in this way get erroneous notions. Some of them have the power of motion, but they have this power only in water. They have it only when they are in water or a fluid of some kind. They do not move through the air. And that is again a fact that we make use of in practice. They do not move through the air through any power which they possess themselves, but they are only carried passively just as dust and the finest particles that float and waft about are carried. They are transported passively then and not actively. They belong to the class of plants that we speak of as molds or fungi, plants that have no green coloring matter. They belong to that group and they grow in different forms according to which they are classified; but we speak of the whole group as bacteria. Some of the forms that these bacteria assume with the different species are pictured on this little chart which you have before you. You will notice that we may have them merely as little spheres or little globules amid masses of matter, when we speak of them then as "cocci," and if we wish to show that they are diminutive we speak of them as "micro-cocci," and that leads to the old joke, if we have so many coccis why can't we have a hen's eye occasionally (laughter). Then we find them in little rods as you see them pictured here. They may be in slender rods or thicker or fatter formations as we find them over here, and thus we speak of them as bacilli, and some of these assume rather curious shapes. Here are two forms which are crossed so as to make it look a little like a pair of scissors. The form of bacteria represented by this portion of the picture are the bacilli that cause lock-jaw. Then you notice the forms down here in which we have them twisted more or less; some just simply twisted as in the bacteria that produce cholera and some of them twisted very much after the manner of a cork screw; or if you do not like that comparison, very much like a lady's curl. Some of them double up like a little worm, and you will notice further on the drawing that some of them, and in fact all of those that have the power of motion have these little, fine, hair-like processes on them by means of which the locomotion of the bacteria is brought about. These little lashes have just recently been discovered, and they cleared up the one problem as to how it was that the bacteria could possess the power of motion. They do it by lashing these little appendages just as many of the little animals that are considerably larger than the bacteria do it by lashing in a similar manner.

Now as to the size of these organisms; they are of course different in size, as you see here, but to give a figure that would be an average one we might say that some of these rods, or some of these forms of bacteria, are about one ten-thousandth of an inch long and about one forty-thousandth of an inch across. Of course such figures do not mean much to us, except to indicate that their size is very small and we could only realize what these figures mean by comparing them with objects that we do know about. Now we could take a cross-section of a hair for example and on top of that hair, if we were to study it up, we could place a whole regiment of bacteria and have a very fine drill ground indeed. There would be plenty of room for all maneuvers that are down in the manual, if we had these small organisms as soldiers. What can be held on the thumb nail is a figure that would be of interest to work out to those of us who are inclined to run after statistics and such things. It would run away up into the millions as you can very readily see.

Then you may ask next as to the rate of multiplication. How rapidly do they multiply? How fast can we have an increase of the number of bacteria? The rate of multiplication will vary somewhat of course, depending upon the conditions under which the bacteria are propagated, the temperature and so on. But to take an average rate again, where we have fairly favorable conditions we may say that bacteria will multiply and they do by simply dividing in two and one of those in two again and so on, at that rate of division, every half hour. That is, we start now with one bacterium; in a half hour, or during the course of a half hour it would divide itself and give us two, and then each one of those two would go through this process of division and we would get four; and we would get then the increase there that we have in the old problem, a cent for the first nail in the horseshoe, two for the second, four for the third, eight for the next, and so on. As you can readily see, we again get startling results. Some one whose mind does run to figures has figured out this thing and he found that we could start with one bacterium and in a day, or a week, or a month, or a year — I have forgotten exactly how long, and it does not matter much — we could fill the whole Atlantic Ocean. While I do not remember the details I do remember that in a surprisingly short time we could have a surprisingly large number ot bacteria if all the conditions were fulfilled. At any rate we see that they do multiply very rapidly.

Now as to what these bacteria do. What do they do in nature? What is their business? What is their purpose in life? While a few of them do produce disease and in this way have given a bad name to the class, most of them are not only harmless fellows but are actually fellows that are doing the most beneficial work for us. So much is this true that it may be safely said that if it were not for bacteria the higher forms of life, of plant and animal life, would simply be impossible. That without these lower organisms the higher organisms would have found conditions for existence impossible long ago and the earth would be entirely barren. They are in the first place the great scavengers that make it possible for a dead tree or a dead animal to undergo the process of decay so that it disappears, slowly to be sure, but as effectually as if thrown into a hot fire. It is burned up more gradually but just as effectually as though we had used heat direct, and this decay is due entirely to the action of the bacteria. Now we see the value of this cleaning up process, the value in two directions. In the first place if this matter were not cleared up the earth would be fairly littered with the bodies of dead plants and animals, and we would be climbing over the dead bodies of trees, and of horses and dogs and cats and so on, that had existed ever since the time they were let out of Noah's ark. Not only do they remove such matter but they transform the animal matter and the vegetable matter to such material that it may serve for plant food and later for animal food again. That is, they keep up the rotation of material and keep this material from being locked up in dead plants and dead animals and make it available again for new plants and new animals that are to succeed the dead ones. In all of our organic fertilizers they play a most important role. The organic substances first undergo the reduction from complex compounds to simpler ones, and in this way are fitted for plant food. So we here have an instance of the highly beneficial — nay indispensable — function that these bacteria carry out for us in agriculture. They produce certain forms of fermentation and souring. The souring of milk, fruits and so on we know comes through the action of the bacteria; and our good housewives practice bacteriology unconsciously just as they do a good many other good deeds, and in most cases most efficiently and according to the strict rules of science, when every fall of the year they put up fruits and vegetables of various kinds. They heat up the fruit first; that is to kill off the bacteria that are there; then they seal it up to keep out the air, as they think, but as we know, to keep out new bacteria which would come from the air and which would start the process of destruction. If we have pure air we can keep things indefinitely. I have in my laboratory a bottle of beef jelly five years old which is loosely stoppered with a cotton plug so that plenty of air passes in and out and yet it is as fresh today as it was at the time it was put up. Pure air is not injurious, except as it carries these bacteria.

Some forms of bacteria produce color. We have one form that produces a red color and it is an interesting form because it helped again to advance the study of bacteriology through investigations that were undertaken to find out just what the phenomena which were produced were due to. In one part of Germany these bacteria, called the "prodigiosus," grew in the milk and caused red spots which were of bacteriological origin, but that fact was not then known. It was then thought that the milk was bewitched; great commotion was caused in the community, so much so that the government took hold of the matter and sent an expert who found the true cause of the discoloration in the milk. In another place the same red color produced by the bacteria grew on the sacrament that had been put up in a church and it was regarded there as a miracle, as an incarnation, but a proper investigation here again showed what this color was due to.

We have other bacteria which produce blue colors. They occur occasionally in milk in these districts. Then again we have certain bacteria which produce green colors, and in short all the colors of the rainbow may be produced by certain species of bacteria. Then you know we have the so-called nitrifyers, which are the important bacteria in agriculture, those that take albumen and bodies of that kind or highly organic nitrogenous bodies and break them down to nitric acid and ammonia and produce a substance invaluable for plant nutrition, a substance made available for plant nutrition; and for that reason they become fertilizers, and, most remarkable of all, we know now of bacteria which can take nitrogen from the air and make it available as in the clover plant and so on. This is so startling that it seems almost incredible, where nitrogen is one of the most expensive fertilizers, that we can turn to these bacteria and have it drawn from a practically inexhaustible source of supply, and practically without cost, from the air itself. Then we find that the souring of milk and cream and the flavor which we produce in butter and cheese is due to the action of certain kinds of bacteria and this is one of the latest features of science in relation to agriculture that is being studied up and no doubt the time will come when we can control the flavor of butter precisely as we wish. When we can produce a highly flavored product or a less highly flavored product at will it will be of great value to agriculture; and when this can be done with cheese just as well as with butter, and when the practical butter maker or cheese maker will no longer depend upon chance for getting a high grade, and therefore a high priced article, but when he will come to the bacteriologist and draw his flavoring matter from the cultures of bacteria and sow that in his cream and in his milk from which he makes his cheese, or into the cheese itself, and in this way get exactly what he desires and not what circumstances are pleased to give him, then you can readily see what advantage and value this subject will prove to be to the agriculturists.

Now, I say some of these bacteria produce sickness. Certain diseases are caused by bacteria, and knowing that bacteria do not arise anew but that they come from progenitors, we know if we take care of a case of sickness in such a way that no bacteria can spread from it we can theoretically at least prevent the spread of any of the so-called contagious diseases, and that fact is at the bottom of all quarantining. Take a case of measles for example. I know that case has come from another case of measles, just as sure as when I see a stalk of wheat I know that stalk has grown from the wheat grain and has not come into existence in any other way. It may be hard to trace. It may be at times impossible to trace the source of any particular case of disease and that has given rise to skepticism. But who can go out in the field and give me the source of every plant found there? We sometimes find in the middle of the field a dandelion growing and while we know it came from dandelion seed, who could tell the particular source or the particular plant from which this plant sprung? And yet no one would doubt the fact that it did come from dandelion seed. You never think that it simply grew in there of its own accord. We have precisely the same fact existing with reference to the production of disease by means of bacteria. We have these plants scattered about just as the higher forms of plants are scattered about and in the study of diseases we have the same problems presenting themselves that are presented to us in the case of higher plant life.

There is another argument urged against the fact that certain diseases are caused by bacteria, such diseases as measles and scarlet fever and whooping cough and typhoid fever and cholera and smallpox, and in fact many others, notably consumption or tuberculosis, and that is that we can have ten persons exposed to the disease and perhaps two or three only will become infected. Two or three only will catch the disease. And so the opponents of the bacteriological origin of disease say if bacteria cause this disease and ten people were exposed, ten people should have the disease, but they leave out of sight again the fact that the problem in regard to these plants is the same as are the problems in regard to other plants, namely, we must have seed and we must have soil. If I sow a handful of seed wheat for instance out into a field that has been properly tilled and scatter it about, that field will have a case of wheat. There will be a growth there and we will have wheat breaking out. If I had a handful of wheat and scattered it out on the street where there is just a little earth here and there and a good deal of traffic and so on, there will be a very mild attack of a case of wheat, possibly here and there, and where the chances are particularly favorable, we may have a sickly stalk spring up but not nearly the infection or severity we had in the first case of wheat; and if I were to throw a handful of wheat on this floor, not a plant would germinate. There would be no case of wheat here. Now we have that same thing precisely in bacteria. It needs bacteria, and it needs the soil. We do not know just what the conditions are that make the human system ripe for the bacteria because we are only approaching that. But we know the blood has the power to a certain extent to kill those bacteria and we know that this power is more marked if the blood is in proper condition. A person of vigorous health living with proper care in regard to food and exercise and sleep, that is, one observing the laws of hygiene and therefore having a robust degree of health, is much less liable to disease, because if the bacteria do fall on this soil they do not find congenial surroundings and they very soon die out. On the other hand we know that with a weak person, broken down through overwork or lack of food or exercise of any kind, and where deterioration has taken place, the bacteria in such a case fall upon congenial surroundings. We have what is known as deterioration to us, or what we speak of as deterioration, but which is beneficial to the bacteria, and if the bacteria are sown in such a field they will spring up and a severe case of disease will result, because we have many of them growing there and each one of those little plants is forming a poison just as deadly as morphine or nicotine or strychnine or any other form of vegetable poison. It is not merely the presence of the bacteria that is injurious to organisms, but it is the presence of the chemical products which are formed and they form a poisonous substance that is very much like the poisons formed by the higher plants such as the poppy, the strychnos and so on.

It might be appropriate to say something in regard to disinfection. Of course if I wished to speak of disinfection in a thorough manner it would take much more time than you would be willing to give. It would take hours to discuss all of the various agents that have been proposed, many of them of great efficiency and others of very little efficiency, for the purpose of killing these bacteria. I wish to mention only one, or possibly two, but am not here in the interest of any advertising firm. I myself am not a partner in the concern which produces these two disinfectants, though I hope at some time to be connected with the house. These two substances are in the first place fresh air and plenty of it, and in the next place sunshine and plenty of it.

The bacteria, particularly those that are injurious to us, are children of darkness; they shun the light and if we air our rooms and our clothing and our milk pails, or air anything else that may have been infected, and at the same time allow the sun to freely and fully strike these parts we are very sure indeed to get rid of our bacteria and in most instances — not in every one, but in most instances — in a very cheap manner indeed, and of all the general disinfectants these two are the most available, and unless special conditions are to be fulfilled they are amply effective for all practical purposes (applause).

President Begg: We now have a short time to devote to the discussion of this interesting topic. Any one wishing to talk upon it is at liberty to do so.

Mr. M. C. Morris of Butler County: I would like to ask the Doctor one question as I am particularly interested in the cultivation of clover. He spoke of the bacteria which bring nitrogen from the air. I would like to ask him to what extent the clover plant itself is dependent upon these bacteria? We hear a great deal now about clover sickness and I would like to inquire whether that is a dearth of bacteria or is that a disease of the plant? We know in the western part of this country they can grow clover and we have also learned that in places where manure has been applied, where there has been bacteria of some kind in the manure, a little better success has been achieved in the matter of growing clover. Can the Doctor give us a little more light upon the subject of clover and these bacteria?

Dr. Bleile: What I do not know about practical farming would make a very large volume. I never grew any clover but I have had people tell me about it. I can theorize on this question and I do not know that anybody can do any more at present. These particular bacteria have only recently been studied. As I said in my talk, what they do is so startling that at first they were hardly believed in. It does not seem quite probable that the nitrogen of the atmosphere should be taken in this way and yet we know now that that is the case. I should say, reasoning from what we know of other biological processes, that they were probably necessary to the growth of the clover plant. We find them always I believe associated with the clover plant, at least where it is fruiting, and the fact that the clover does fruit when they are present, would be an *a priori* argument at least in favor of their necessity because they are either beneficial or they are injurious. In this case they are certainly not injurious and it would be a reasonable conclusion to make that they are beneficial.

President Begg: This is a subject of considerable importance to the farmer and I hope you will all avail yourselves of the opportunity of asking questions of the Professor.

Professor C. E. Thorne of the Ohio Agricultural Experiment Station: In a series of French experiments where clover has been grown for half a century on the same farm and on the same land, it has been noted that in rich garden soil, which had been a garden for years before the experiments were begun, clover has grown continuously without any assistance from manures or fertilizers of any kind; whereas in the field experiments where clover is grown in rotation with other crops this trouble called clover sickness is to be contended with. The French experiments give us practically the same proof that clover must have some form of organic nitrogen in the soil, in order that it may make use of the globulous growths. In view of our own observations which have been but desultory thus far we find that we have been very much more likely to find globulous growth on clover grown on thin soil than in rich soil. Apparently the clover is able to maintain itself in rich soil without the aid of the globulous growths, but when the soil food becomes deficient then we are apt to find that the bacteria are coming to its relief and helping it out.

Mr. Morris: Mr. Chairman, I have been extremely skeptical on this matter of clover sickness. I believe there is more ground sickness for want of clover, than from too much clover. I would like to ask if this gentleman really thinks there is anything in clover sickness and if what he terms "clover sickness" or what we term in Ohio "clover sickness", would be a dearth of bacteria?

Prof. Thorne: I do not think we have in Ohio the disease known in Europe as "clover sickness." We have difficulty in getting clover to stand but I do not think we have the disease known there as "clover sickness." It is a matter I am not positive about, but I do not think so.

Dr. W. I. Chamberlain of Summit County: Do you think it more likely due to the matter you speak of, organic nitrogen in some form?

Professor Thorne: I do. I think that is the secret of clover sickness in Ohio, a too sparing use of barnyard manure.

Dr. Chamberlain: If Professor Hunt is here I think he perhaps could give us some information in regard to the extent which artificial bacteria have been already used in producing flavor in cheese and especially in butter. That is a matter of considerable interest and I would like to have him state how great a success he has already had in that direction and also if he will kindly give us his opinion as to the probabilities of future success along this line. That is of interest to the dairymen certainly.

Professor Thos. F. Hunt, Dean of The College of Agriculture and Domestic Sciences, Ohio State University: I think any of you can readily see if you have the very best milk and treat it under the very best conditions you must get the very best product. And if these organisms come from that very best milk when treated in the very best way you can not make butter better by the use of these same organisms than with the good milk you started with. In other words, you can not hope to make any better butter out of these same organisms than you can out of the very best milk produced in the very best way. But you can hope by the use of these organisms widely distributed to make a more uniform product; that is possible; that is reasonable, and that is being done. In Denmark they are now making a more uniform product but they do not claim there nor do the people here claim that any better butter can be made than can be made from the very best milk by that process. But you can see if you have all kinds of milk sent to you and you have inferior organisms in there, or those organisms that would give you inferior flavors, and you sow into the milk the best organisms then these will drown out the poorer ones and give you a uniform grade of butter. That is as far as the subject has advanced at the present time. If you take them and sow them either in the raw milk or Pasteurized milk it will undoubtedly produce a more uniform grade of butter, but no better butter than is possible by the use of the very best milk under the very best circumstances.

Dr. Chamberlain: Would you call that a substantial gain?

Professor Thorne: To be sure it is. It is a substantial gain; and I want to call attention to the distinction between making an article of varying grades and making an article of a uniform grade the country over. The great help is going to come through uniformity and not through the superiority over the best we have already done.

Mr. Morris: I would like to ask Professor Thorne if the Ohio Experiment Station has come in touch with any method of propagating these clover bacteria? I have read that some of the German experimenters are about ready to put these on the market as a commercial product mixing them with the clover seed, and I would like to inquire of him if he has any information on the subject?

Professor Thorne: We have not made any experiments in that direction as yet. I know that point is claimed by the German experimenters but we have not put it to the test.

President Begg: Gentlemen, there are a few minutes left for the discussion of this very interesting subject, or the propounding of any questions which any members of the institute may desire to have brought out more fully.

Mr. John Larrimer of Fayette County: In regard to clover I would say that I have had some experience with a field which was planted in clover some fifty years ago and it was kept in clover until it would not grow more than five or six inches high; they would take a crop of hay off it and then a crop of seed and they continued that just as long as the land would produce enough to make it profitable. That field will not produce a good crop of clover today nor will it produce a good crop of wheat.

Mr. A. L. White of Muskingum County: Upon the chart as presented by the Doctor are a few forms representing the bacteria that produce lock-jaw and since we have had considerable loss from this disease, and since it has become common over the country I would ask the Doctor if after the symptoms of the disease appear is there hope that the bacteria may be driven out?

Dr. Bleile: Mr. President, I see here Professor White who is professor of veterinary medicine and he can answer that question much better than I can.

Professor David S. White, Associate Professor of Veterinary Medicine and Dean of the College of Veterinary Medicine: I have the grip, gentlemen, and the bacteria are in my throat and it will be difficult for me to speak so as to be heard I fear. In answer to the gentleman's question I presume this lock-jaw is among animals, is it not?

Mr. White: Principally; yes, sir.

Professor White: What section of the state?

Mr. White: Muskingum County.

Professor White: Down in the southeastern part of Ohio there is a great deal of lock-jaw for the simple reason that in the soil of that section of the country there are a great many spores of these germs: the tetanic germs; those germs as you see them delineated on that chart, I do not think show the spores. Perhaps they do. But at any rate the germ of lock-jaw is a rather delicate one. It is not very hard to kill it but the trouble is when conditions become rather favorable for its further development it assumes a so-called spore form and these spores are harbored in the ground, usually in soils that are rich in organic matter, garden soils, rich bottom fields, etc. In some tropical countries the soil contains so many of these spores that for instance a gelding sells for double the price of any other horse. Now in regard to this gentleman's question — can anything be done after the disease has already set in, that is, after the animal has already shown symptoms? Very little can be done. The death rate of that disease is in horses eighty per cent. and human beings something over ninety per cent. Of late, however, we have attained some success in the use of the so-called toxic serum, which I believe is simply the toxic product of those germs and by introducing this serum into the circulation, or into the animal system as we say commonly, in a great many instances we have had apparent success. This serum produces immunity against the disease. In Pennsylvania in their mines they use a great many mules. The mules are frequently getting injured and yearly they lose quite a large per cent. of these animals from lock-jaw. The state veterinarian of that commonwealth introduced into that mining region this serum and they inoculated with this fluid or this serum a great many healthy mules. Statistics show that tetanus in that locality now is a very rare disease and perhaps while we can not do much to combat it, after the symptoms have developed, a great deal can be done along the line of prevention, and that brings up the matter again of disinfection. As you know most of the wounds that produce lock-jaw are in the palm of your hand or in the foot. In the horse most frequently tetanus follows a punctured hoof or something of that kind. That simply means that my hands look now apparently clean but if you should make a microscopic examination I am afraid you would be rather astonished that such a dirty individual would be allowed in your presence. These germs are very small and very minute. There may be upon my hands now some of those spores. I do not know. A slight lesion there would allow them to gain entrance. Tetanic germs, unlike a great many others, do not live in the blood at all; they do not circulate through the system at all. But at the point of inoculation, that is where they get in at the wound, they establish themselves, so to speak, and set up a little manufacturing establishment. The product of this establishment is called tetanine, a substance which we have now separated into powdered form. Its action is a good deal like strychnine only perhaps a thousand times more effective. That should indicate to you that all wounds upon such portions of the body — in fact all portions of the body — should not be treated with dust and cobwebs and things of that kind to stop the hemorrhage but should be treated in the most cleanly manner possible. If you can not get anything better get clean water; water that has been boiled say for an hour; let it cool down and use that. That is perfectly sterile and use that in cleansing the wound. And if you have been careful in this regard in your manipulations whether from intentional surgical operations, or from accidental wounds, you can not get tetanus. Though we operate at the University upon a great number of animals every year we have never had as the result of any operation a single case of lock-jaw simply because we have used that precaution.

President Begg: If there are no further questions to be asked or no further remarks to be made upon this subject a motion to recess until 2 P. M. will be in order.

On motion the Institute then took a recess until 2 P. M. of same day.

AFTERNOON SESSION.

Tuesday, January 10, 1899.

After calling the Institute to order, President Begg said:

Gentlemen: — The hour has arrived for us to resume our deliberations. I wish to say before beginning the program as we have an increased attendance this afternoon we want every one who comes here to feel that he has a personal interest in the Institute. Whether or not you may have had much experience in speaking, we want you all to be free in expressing yourselves or in asking any questions upon any topic under discussion. We want to get just as much good out of these meetings as we can and all should be equally interested in promoting the welfare of this Institute.

The first topic for discussion this afternoon is "Ohio Wool and Wool Growers." We will now listen to an address upon that subject by

Mr. John G. Ickis, of Adena, Ohio. Mr. Ickis, I would say, is a practical wool grower and can talk from personal experience and knowledge upon this topic. I now have the pleasure of presenting to you Mr. John G. Ickis

OHIO WOOL AND WOOL GROWERS.

By John Ickis, Adena, O.

There is an idea abroad in the state that the Ohio sheep is a mutton sheep. Whatever may have been the origin of this idea, it has at least been fostered by many of our best institute lecturers. Our experience in eastern Ohio, where we are interested in wool growing, is, that the lecturers sent us by the State Board of Agriculture are almost without exception advocates of open wool sheep. Even in the excellent address on "Sheep and their Management" delivered at the institute a year ago, the only mention made of the Merino was to discuss what was the best cross to make on the Merino to produce mutton lambs. This sheep, once the friend of kings, debased to a slave of mutton lordlings!

We have no quarrel with these good friends of ours, but we wish them to keep in mind that the Ohio sheep is the sheep that produces Ohio wool; that it is the X and the delaine wools that have given Ohio its reputation as a wool-producing state; and that these wools grow only on the Merino. A single cross of mutton blood in any bygone generation destroys the characteristics of Merino wool as surely as the slightest tinge of negro blood destroyed a man's liberty in slavery days. Merinos are the only sheep with a pedigree centuries old. They alone have been the idols of kings. The precious cabanas of Spain were guarded as jealously as ever Turk guarded his harem. The wars of Napoleon scattered the precious flocks of Spain. Many of their choicest Merinos came to America; they crossed the Alleghanies; they helped our sturdy forefathers subdue the forests of Ohio while our mutton sheep were still the serfs of English lords; they gave their coats to warm the Ohio boys, as for four long, terrible years they fought for our nation's existence. In the reputation they have given the state, in the wealth they have produced, the Merinos have justly earned the proud title, — The Ohio Sheep, — and let no one attempt to tarnish that fair name.

While this is true we are ready to admit that the Merino's kingdom is not what it once was. There have been years when none were so poor as to do it honor. In turn it has been petted and then kicked by the politician, and it is difficult to tell which is being done today. After shearing we asked thirty cents for our wool and were offered twenty-seven. When we concluded to sell for twenty-seven, we could get but twenty-six. When we thought it best to sell at twenty-six we found the price had fallen to twenty-five cents. If this downward course continues the Merino will again be "without honor in his own country." No greater disaster could befall Ohio than the destruction of its wool flocks, and it behooves those of us interested to study carefully all that pertains to their welfare. What can we do to make wool-growing profitable?

First, let us guard well the good name of Ohio wool. In the Commercial Museum in Philadelphia there are samples of wool from every wool-producing country and class, and the wools grown in the United States are invariably superior. Of the wools grown in this country none are better than those grown on Ohio hills.

"Who steals my purse steals trash; 'tis something, nothing;
'Twas mine, 'tis his, and has been slave to thousands,
But he that filches from me my good name
Robs me of that which not enriches him,
And leaves me poor indeed."

This should be the expression of the Ohio wool growers and even the first line may not be inappropriate. If our wool is deteriorating, we have no one to blame but ourselves. No animal is more plastic under the hand of man than are sheep. To please man's caprice they have covered themselves with wrinkles lengthwise and crosswise and again at the call of fashion they shook out the heavy folds and assumed the plain garb of their ancestors. So with the fleece. At the nod of the shepherd they rolled off their enormous fleeces of thirty and forty pounds, fairly breaking themselves down in the effort and thousands going to untimely graves; or, when the markets called for delaines, in almost a single generation they lengthened out the wool fibres and added the creamy luster that is the height of the wool grower's art. Thus we see how responsible the Ohio sheep men are for the condition of the Ohio wool. Never had king more dutiful subject than we have in our sheep. It is at our bidding they fill our wool houses with X, XX or delaine. It is ours to study the demands of the markets and theirs to satisfy them. Today there is a demand for a large per cent. of delaine wool. The Commercial Bulletin says that Ohio delaine is almost a thing of the past. This demand is in part due to the fact that the long, lustrous delaine fibers can carry a larger amount of shoddy. Much complaint has been made by manufacturers as to the condition of Ohio wools when they reach the market. They seemingly object to using one hand to pull out the burs and dirt and manure from Ohio wool, although with the other they are stuffing shoddy, and mungo, and waste into the loom. They probably want both hands free to shove in their own adulterants. Be it as it may we must see to it that Ohio wool is an honest product. In this era of fraud let us hold up the Ohio fleece and challenge the world to find in it wilful deception; otherwise, we have no right to cry out against the frauds of the manufacturer. Our own acts would be a complete estopple. It is just as much fraud to put manure, burs, and dead wool in the fleece as it is to put shoddy in the goods. The man who does either is breaking the eighth commandment — trying to get other people's money without giving an honest equivalent. The laws of Ohio can put the wool grower behind the bars for his fraud and they should put the maker and seller of shoddy goods there also, only do not put them in the same cell, or the wool grower will come out a bigger rogue than he went in.

The second suggestion to Ohio wool growers is that we must study to increase our wool products. There is need of this when we remember that Ohio has fallen to the second place as a wool producing state, reckoning from a scoured basis. We need to study our business more. There are problems that call for the best efforts of the wool grower's mind. In this work we invoke the aid of the experiment stations. They too have been worshipping at the mutton shrine. We seek some Professor Shaw to aid us in solving the problems of our calling. According to Judge Lawrence we can have an average of but five pounds per fleece in Ohio this year. Shall we feel satisfied with such an average? Our Honorable Secretary of Agriculture has a flock that clips over ten pounds per head. Last spring we sheared twenty-one three-year-old wethers that produced two hundred and five pounds of washed wool. These figures show how much room there is for improvement in the average flock.

How much wool can be grown per acre on Ohio farms? Would it average six pounds today? The limit Professor Shaw sets is two hundred and fifty sheep on one hundred and sixty acres; and yet I have known a clip of five thousand pounds on a farm of one hundred acres. How many sheep per acre? Here is one of the most fascinating problems of sheep husbandry. Fifteen years ago my brother and I were tending three hundred sheep on two hundred acres of pasture and arable land. As wool began to go down we felt the necessity of increasing our flock if we were to remain in the business. The next spring we sheared four hundred, the next five hundred; then we divided the flock and

I took part to another farm of about the same size, but we continued the study of this problem and found place for a few more sheep each year until in 1893 we sheared twelve hundred and fifty sheep. Then came dry weather, during President Cleveland's administration. Those were four dreary years for the sheep men of eastern Ohio. How the hot sun parched the meadows and the hillside pastures were burnt bare of every green blade. I remember standing before a mow that was but half full and yet containing all the hay on the farm and asking what I would do with six hundred sheep the next winter.

Even the price of wool and sheep kept drying up until profits were a minus quantity. It was a dry time. The sheep went to the markets by thousands, many not bringing enough to pay the freight. It made the heart sick. We held on to all that we could. Mother told us she had often seen men tumbling over themselves to get rid of their sheep and just as often breaking their necks to get them back again. But any four years will come to an end, and then the rains descended and the hills were clothed with pastures and the barns bursting out with hay. We are building up again and will shear eight hundred or nine hundred next spring. Here are some of the lessons we have learned in these years:

We can winter two sheep for each one summered.

A wether can be bought in December for four dollars and sold out of the wool the following May for four dollars.

This sheep can be kept on a bushel of corn and a half bushel of oats. The manure will pay for the hay and labor. For this bushel and a half of grain we will have eight pounds of Ohio wool. We think this is a good exchange.

Our farm lands are becoming richer each year. We can grow from sixty to one hundred bushels of corn per acre.

Our rotation is, more manure, more corn; more corn, more sheep; more sheep, more manure.

When a mow is empty we can fill it with sheep. Sheep can sometimes be bought in March for the price asked in December.

Lame sheep can be bought in December, put in the barn, kept there until May and be made sound footed at but little expense.

It is usually a mistake to sell a Merino without shearing it.

We cannot grow wool in free competition with Australia. We never again want free wool and dry seasons at the same time. If we are to have free wool we want the Australians to have the dry seasons.

The third suggestion is that we must work for anti-shoddy legislation. There are two classes interested in these laws, — the wool growers and the wool wearers. It may be thought jealousy on the part of the wool grower but in reality it is self-preservation. A single shoddy mill in Cleveland has a capacity of eleven million pounds a year. The imports of shoddy in 1897 were forty-seven million eight hundred thousand pounds, — equal to one-third of our domestic clip. It is safe to say that shoddy is displacing an amount of wool equal to one-half the annual product of the United States. We feel the injustice of all this all the more when we consider how low is the cost of wool in a suit of clothes, when nothing but pure wool is used in their manufacture. Eight pounds of good, washed Ohio wool will make an honest, all wool suit that will stand the wear and protect and warm the body. One good sheep will furnish the raw material for your clothes faster than you can wear them out. Two dollars is the wool grower's bid on the wool for a suit of clothes for the American citizen. The shoddy man's bid is four pounds of wool and two pounds of shoddy — say one dollar and thirty cents for the mixture — and he will make a suit of clothes that will fall to pieces in the prime of its youth. Why do they not make a bid for all shoddy? Because they can no more make yarn of all shoddy than they can make ropes of sand. Were it not for the shoddy mills the wool growers would be the most prosperous of farmers. It would be a rich investment for the wool growers could they buy every woolen rag in the country, pile them a hundred feet high in sight of a shoddy factory, and touch a match to the heap. They would be greasy enough to burn.

It can be easily seen why the wearer of woolen goods will be benefitted by a law that requires shoddy to be stamped. Today no one, aside from the expert, knows whether his coat is all wool or not. The probability is, that it is not.

We remember the old story told by the boy's coat. It told of once growing on the sheep's back, of the shearing time, the noisy mill, and the swift flying shuttles; until it assumed the form of a coat under the tailor's skill. The coat doubtless supposed that it had reached the last chapter of its story. It was but the first. When thrown aside by the boy it was picked up by the rag man and sent to the shoddy mill. What strange companions it found in the great noisy mill. On all sides were piles of rags from every part of the world. Some one has said: "Shoddy always was, now is, and always must be an unwholesome article of dress. It was made from waste woolen; the rags worn by foreign lepers, discarded from hospitals or worn out on the backs of beggars being no small part of its makeup. No shred of wool is too frayed, too coarse, or too dirty for conversion into shoddy. The rags of the mop that has cleansed the floor of the most loathsome saloon on which the drunkenness of the lowest class of residents of a great city have trodden and spat, the cast-off stockings of the dirtiest tramp, the skirt of the most diseased drab that walked the streets in nightly conquest of whom she may allure; all go to the shoddy mill and all come out as material for the manufacture of 'cheap clothing, all wool'."

What stories could the boy's coat tell today? Well for the boy's morals, perhaps, that it cannot talk. If the makers of shoddy goods have any religion aside from the "gospel of greed" they must believe in transmigration. From the loom to the merchant's counter; from the merchant's counter to the boy's back; from the boy's back to the shoddy mill and thence to the place of starting. Like Tennyson's brook our wool goes on forever and the further it goes the faster it flows. Whatever their belief, we know they have little patriotism, and that they would as soon put their shoddy in a suit of blue as any other.

In conclusion, let me bid the wool growers be of good cheer. Nothing can take the place of Merino wool. There must always be a demand for nice, soft woolens. We must encourage their use. We must cease making fun of the dude with his English ways — he is one of our best customers. We must cease envying the city man his fine clothes — he is helping to fill our pockets. We must preserve our Merino flocks, for Australia and Argentine are crossing theirs with mutton blood and it will take years to again get them on a fine wool basis.

We have an industry worth striving for. It does not blow down, rust, rot, or freeze out. Wool is the handmaid of civilization; both belong where the snow flies. The man in wool has always conquered the man in cotton. Let us regard wool as one of the corner-stones on which the future greatness of our state must be built. It has given us wealth, it has given us health, and has done more than anything else in giving us the Ohio man. On thousands of farms it has been true that the money from the wool sent the Ohio boy to college and kept him there until he came out an Ohio man, an honor to himself, to his state, to his nation.

At the conclusion of the address of Mr. Ickis, President Begg said:

Doubtless there is a large number of practical wool growers in the Institute, and we will be very glad to hear them discuss the various points of this exceedingly interesting address.

Mr. A. G. Blessing of Fayette County: I was much interested in what Brother Ickis had to say as to the possibilities of wool and mutton production on the Ohio farm, and I think it is a subject in which all agriculturists are much interested. I believe, however, that he is a little misleading in his statement when he says that he knows of a certain farm — I presume in Ohio — of one hundred acres upon which there had been produced five thousand pounds of wool. I am afraid that Brother Ickis had better qualify that statement a little for if all our hog men and cattle men and horse men who are attending this convention find that so much can be accomplished in wool growing they will all probably rush into the wool business and thus overdo a pretty good thing. I expect the statement is absolutely true. I do not doubt it at all, but I do not believe that five thousand pounds of wool con be produced on one farm in one year and produced from the food and the corn and the oats and the hay raised on that farm. If it can I would like the brother to explain how.

Mr. Ickis: I do not know whether I caught the drift of the question, but I believe the question was in regard to the man who had grown five thousand pounds of wool on a hundred acre farm. In reply I would say, you would better not all try that because this man was one man in a thousand with sheep, and while he succeeded and has made money, many another man attempting the same thing would fail. It is in the man I believe just as much as anything else.

Mr. Blessing: How many sheep did he have?

Mr. Ickis: He sheared eight hundred sheep. When I first wrote the statement I was writing from memory and I had put it four thousand two hundred pounds, but he told me the other day that it was five thousand pounds.

Mr. J. W. Pollock of Greene County: Can you tell us how you can raise one-half of it on one hundred acres of land? I would like to know how it is done.

Mr. Ickis: I can tell you how he raised all of it if that will do (laughter and applause).

Mr. Pollock: I would be still better satisfied to know how he raised all of it.

Mr. Ickis: He did not pasture very many sheep through the summer and in the autumn he began buying sheep and he bought sheep on until shearing time. They were wethers, and when they sheared them they went to market. They were kept in a barn and in the lots by the barn.

Mr. Pollock: Did he raise also the feed on the one hundred acres?

Mr. Ickis: No, sir, not entirely. He had to buy feed. As for our own clip of wool, I would say we have never bought but two tons of hay since we have been in business.

Mr. Pollock: Do you produce all your sheep?

Mr. Ickis: No, sir. If you will remember I made that statement simply to show the possibilities in an extreme case, and that is what I was trying to do in making that statement.

Dr. W. I. Chamberlain of Summit County: I do not see that there would be any limit whatsoever in the possibilities of wool growing under those circumstances. If you use the farm simply as a pasture and buy in the sheep in the fall and then buy the feed to feed them, and then shear them, and then sell them, I do not see that there is any limit to the amount of wool that a man might shear on his farm but I would not call that a fair statement. I think the speaker ought to have added "That it was not much of a year for wool anyhow." (Laughter and applause).

Mr. Blessing: That was just the point I wanted to get at. I think I can shear one hundred thousand pounds of wool from a hundred acre farm just as well as one thousand pounds, and I can feed the sheep on the produce from the farm but not for very many days. What we want to know are the possibilities of wool growing from sheep which are maintained for one year at least on the produce from the one hundred acre farm, or any other given number of acres.

Mr. Ickis: That is not the question I was discussing at that time. The question was, How much money can you make out of the wool on a given number of acres of land?

Mr. Blessing: You mean how much can you beat some other good farmer out of?

Mr. Ickis: No, sir; that is not the question. The wool grower is one of the most honest men in the world, and the question which you suggest does not enter into the discussion at all.

Mr. Blessing: Can you tell us how much this man cleared on those five thousand pounds of wool?

Mr. Ickis: I can not tell you that, no, sir. I can find out though and have it printed in the papers.

President Begg: Mr. Blessing, can you give us any information on this subject?

Mr. Blessing: I have never figured it, Mr. President, and I was simply asking for information.

Mr. L. L. Pegg of Franklin County: Before you get into this wool business too far I would like to ask of the speaker a question which was a little aside in reference to a statement that he made, and that was in regard to raising one hundred bushels of corn on an acre. We sometimes see that statement printed in some of our agricultural papers, which are edited by persons who know something about the possibility of an acre in regard to corn raising, and the editor usually adds what sort of a basket it was raised in, or how many pounds there were to the bushel of that corn. We would like to know how that one hundred bushels of corn was raised on an acre.

President Begg: That might be considered a digression from the subject. The question of corn growing will come up later and probably the gentleman's question can be answered at that time.

Mr. Pegg: I know it is not exactly in line with the topic under discussion but I thought perhaps the speaker would not be here tomorrow and we would thus lose valuable information on that subject.

Mr. Ickis: If I am not here I have two good friends here from Harrison county who will bear me out in my statement that a hundred bushels of corn to the acre is not an unknown thing by any means in Harrison and Jefferson counties. Dr. Chamberlain came down to our institute at one time and this statement was made to him and he promptly disputed it, so perhaps he was the editor you referred to. But I saw a dozen hands go up in that audience that afternoon when the question was asked how many had raised one hundred bushels of corn to the acre and they all said that they had done it.

President Begg: I notice that the last subject upon the program for this afternoon is the "Cultivation and Breeding of Corn," and this will be legitimate discussion at that time. Please stick to the subject as closely as possible which is "Ohio Wool and Wool Growers."

Mr. O. E. Bradfute, Cedarville, O.: Mr. President, I am not willing to see this subject dropped and turned aside in the way it seems to be turned. I am convinced for one that there is money in the fine wool sheep of Ohio, the Delaine Merino. I have been convinced of it for a number of years. Even through the recent depression I want to say to you that we found sheep were one of the most valuable adjuncts in our farming operations that we had upon the farm. We found that each and every year they gave us a profit even in the hard times, so far as wool growing was concerned. I will admit that we are not in the sheep business merely, but that we grow them in connection with other live stock and we found that they were a very valuable piece of property to own, and the money they brought us seemed to us to always be very much more than the cost of the sheep during the year. I am thoroughly convinced that the average Ohio farmer may well afford to keep a few sheep in connection with his other live stock and he will always find them a profitable investment. They do not need to cost him very much. There is not any question to my mind but what the Delaine Merino or Merino of any other description can be kept for a very much less cost than can any other sheep of any other breed. They can be kept under more difficult situations. You can keep a Merino where you could scarcely keep one of the mutton breed. It is not necessary that the Merino be always housed as close as the mutton breed. They seem to me to have more ability to take care of themselves, and I think the average Ohio farmer is missing a good safe business speculation when he fails to keep a few sheep upon his farm. I am not advocating that everybody go into the sheep business but I do think that a man can do well to keep just a few of them and they will always prove to be a profitable investment. I think, as the gentleman suggested in his address, that the sheep men of Ohio, not only raisers of the mutton breeds but also of the fine wool breeds must see that something is done with this shoddy question.

It occurs to me that that is the real source of all our trouble, and if we are going to get rid of the shoddy manufacturer it lies within the province of the Ohio wool grower to take the lead. Ohio always does lead in everything else and I do not see why she should not take the lead in condemning shoddy. And I think for one that it is the duty of the Ohio wool grower to take the lead in this fight against shoddy and force it to a conclusion which will drive shoddy out of existence.

Mr. Rankin of Fayette County: I would like to ask the speaker what effect he thinks the unusual demand for early lambs has had upon the wool market and upon the supply of wool and the quality of wool?

Mr. Ickis: I would say that the only effect it has had, has been that which was noted by the Commercial Bulletin, the decrease in the percentage of Delaines, in the Ohio wools. We can see that from the fact that Delaines are largely grown upon the young Merino sheep, the mutton sheep having displaced, or having taken the place of the young Merinos, or taken out in part the delaines from the Ohio wools. And there has been a great change even in Ohio wools in the last five years. According to Judge Lawrence the percentage of fine wool in Ohio wool was eighty per cent. to twenty per cent. medium, but today he says it is eighty-five per cent. medium and fifteen per cent. fine. Whether the Judge has the figures to bear this statement out or not I can not say, but I never knew him to be mistaken in my life. We thus see what a great change has come over Ohio wools in the last six or seven years. It has been true of all the wools. There is going to be a famine of Merino wools some of these days and then the Ohio farmer that has stuck to his Merinos will perhops get better prices than he is getting today.

Mr. Stewardt: There is a question I would like to ask the speaker which comes from an incidental remark of his. Did I understand him to say that they got thirty cents a pound for their wool? I would like to ask how he was able to get thirty cents a pound? I am somewhat interested in the sheep question and the wool question. But I have only been able so far to get about one half of that price for wools that are claiming the highest price, the long staple, and that is a secret I would like to know, how to get better prices for our wool. We only got from fifteen to sixteen cents a pound last year.

Mr. Ickis: The gentleman did not understand me. I said that we asked thirty cents and we were only offered twenty-seven cents, and when we were ready to take twenty-seven we were only offered twenty-six; and we finally got twenty-five and one-half. We sold our wool last week at twenty-five and one-half cents and it was washed wool. Perhaps that is the reason you are only getting fifteen cents for yours.

Mr. Stewardt: Please tell us how it was washed?

Mr. Ickis: Part of it was tub washed and part of it creek washed or brook washed.

Mr. Stewardt: Mr. President, on the subject of washing, when I began to keep sheep I did not wash for the simple reason that I had no good place to wash for the first year or two. Then my neighbors were washing and I found they would generally get a difference in the price for what they called washed wool. They ran their sheep through the creek once or twice and then called it washed wool. And I concluded if that will bring a better price I will do likewise and so I did, and I got a price equal to the price they received, but I condemn the whole practice. I claim it is simply a fraud, the manner in which the majority of sheep are washed by simply driving them through the water a few times, and I think the sooner the sheep growers of Ohio quit the practice altogether the better it will be for ourselves and for the buyers of our wool.

A Delegate: I would like to ask Mr. Ickis if he knows of any of the objections which the dealers or the manufacturers have to the Ohio wools? We have been looking the matter up and we would like to know.

Mr. Ickis: Mr. Chairman, I have written to some of the manufacturers to know what were the objections to Ohio wools and in reply they have said one of the objections was the very common practice of stuffing fleeces that they had found in the Ohio wools. One dealer said that he bought one hundred thousand pounds of Ohio wool not long ago and out of the one hundred thousand pounds he found eighteen per cent. of stuffing in the wool, and that was quite a loss to the manufacturer, because it had to go into another grade at a lower price. Another objection that they have is the way in which the Ohio wool is put up in the manner of tying it. They sent me a specimen of the string with which Australian wool is tied. It is simply tied once around the fleece; very smooth, nice twine and very light. They say they found one fleece of Ohio wool in one of the mills of the east that had one hundred and thirty-six feet of binder twine around it. Perhaps you think I am telling you big stories to-day but that is the statement which was made to me. That was the last fleece of wool and they wanted to use all of their twine and start anew next season. The manufacturers also object to the use of cycle twine or binder twine. They say it is almost a crime to tie a fleece of wool with binder twine, and I think it ought to be made a law in Ohio that no binder twine should be used in tying Ohio wools. If you want to keep up the reputation of your wool, you want to see to it that it is not tied with binder twine.

Dr. Chamberlain: What is the harm?

Mr. Ickis: The fibers of the twine mix with the wool.

Mr. Pollock: Will you tell us how the fleeces are stuffed?

Mr. Ickis: They tag the sheep in the spring before washing. And they keep those tags and when they wash the sheep and shear them they put those unwashed tags in the washed fleeces; that is one way of stuffing a fleece. And if there are any portions of the fleece that have manure upon them, that goes in also. If a sheep dies, they will save the wool and use that in stuffing the fleece — but perhaps I would better not tell you any more. They will take a ram's fleece that weighs forty pounds and divide that up into ten or a dozen parts and put it into as many different fleeces.

Mr. Stewardt: What are some of the advantages you claim for washing?

Mr. Ickis: I am not here to advocate washing. But it is the practice in eastern Ohio, and you know when we are in Rome we have to do as Rome does. I would be glad to see the practice of washing done away with.

Dr. Chamberlain: Don't the buyers force washing by the heavy discrimination they make against unwashed wools?

Mr. Ickis: Yes, sir.

President Begg: Is there any further discussion upon this topic? It is certainly an interesting subject to us all.

Mr. J. A. Lehman of Ashland County: I keep sheep, and have always kept them, and was raised among sheep, but I have never been able to keep as many sheep on a given number of acres in connection with general farming as some men claim to have been able to do. I do not believe it would be profitable to attempt keeping the maximum number because you have noted what extremes will result in. A few years ago, as was suggested, we were all trying to see how few sheep we could keep. Now a great many are trying to see how many they can keep and the result will not prove satisfactory, I think, in Ohio. But I like Brother Bradfute's plan of keeping a few sheep. And I think you will find up to a certain point that that flock will increase and will pay, and will be more remunerative than any other live stock you can keep on the farm. It has been demonstrated that a pound of mutton in a strong, robust, healthy sheep can be grown as cheaply as a pound of beef, and the wool is simply extra. You have to grow a coat on your cattle, your horses and your swine from which you get no return. But with the sheep you get a fair profit from every fleece that you grow. I think also, as has been suggested here this afternoon, that the old system of washing sheep should be done away with. It is a farce. There is no question about it. It is just as reasonable to duck a man in a tub of cold water for the purpose of washing his clothes as it is to plunge a sheep into cold water for the purpose of washing his fleece. There have been certain statements made as to the kind of sheep to keep for profit. There is no question but what America is big enough and her resources broad enough to admit of all manner of tests as to the selection of breeds of sheep. They are all profitable. So much depends upon the shepherd. A good shepherd and a good healthy breed of sheep makes a good combination, with the feed and the grasses that grow on the hills of Ohio.

Mr. A. G. Blessing of Fayette County: The gentleman who just spoke said that a pound of mutton could be grown as cheaply as a pound of beef. I have tried to ascertain what it cost me to make a pound of mutton on a nine to ten months' old lamb with corn at thirty cents a bushel and clover hay at five dollars and a half market price at that time. The hay was estimated but I have made the estimate large enough so that I was positive I was giving it full credit. The price of the corn was taken at the market price of thirty cents a bushel and the cost of the lamb was two and three-fourths cents a pound and we sold it at four dollars a hundred. There was a profit of one and a quarter cents per pound when lambs were worth four dollars a hundred and corn thirty cents a bushel and clover hay five dollars and fifty cents. That was some three or four years ago when sheep were very low.

Mr. Rankin: I would like to ask the gentleman if he also took into consideration the extra expense of maintaining the ewes and raising those lambs, or did he take the full weight of the lamb and only charge up the amount of feed consumed while raising that particular lamb?

Mr. Blessing: I wish to say that I bought those lambs about May and took them home and weighed them; and they cost me three dollars and thirty cents a hundred. They were on full feed. They had just arrived at the full feeding period when I bought them. They had been fed oats. bran and corn. Then I put them on corn and clover hay, full feed, and they were bought and sold as I have stated.

President Begg: If there is nothing further on this subject we will pass to the next topic upon the program which is an address by Mr. E. H. Cushman, President of the State Horticultural Society.

Mr. E. H. Cushman then addressed the Institute as follows:

HORTICULTURAL INFLUENCES.

Mr. President and Gentlemen: — Man is a creature of influences. His surroundings have made him largely what we find him today and his environment today predetermines his character for tomorrow. Turn where we will we see these effects constantly being carried out. Conditions properly united have brought about and made this institute a fact. Men can, and will, control conditions to the advantage of the human race in proportion to the wisdom and knowledge which they possess. All honor, then, to the men who seek wisdom and understanding to the betterment of their fellows.

The influences of horticulture today are greater than at any previous period in history. They reach every avenue of life, every condition, be it that of the beggar child who snatches the refuse from the street or the belle of the four hundred, as beauty bedecked she promenades at the reception; be it the Sunday pleasure seeker or the church attendant; in commerce, in state and national legislation; in all the arts and sciences we find the quiet, all pervading influences of plant, flower and fruit.

The results obtained today were made possible before man had come to ask why this or that flower and fruit were. When early in history plant life began to influence man to inquire into its laws and stir him to solve those complex problems of plant growth and production, then and not until then, was horticultural influence born to man.

Men of science are conspiring to ask questions and solve them as never before. Witness the grand aggregate of experiment stations and colleges with their professors whose chief life work is to study how plants live and grow, and give the results to all who may ask.

Contemplate for a moment the great army of business horticulturists who are asking nature in the most practical way the questions it is necessary for them to solve. They must not only know how to produce but they must study all conditions of trade that they may know how to sell; how to feed the million with the most refined products of the soil. Stand on the market thoroughfare of one of our large cities in the early morning and witness the varied panorama of the fruit and truck garden there taking place. Follow the leading groceryman as he selects his purchases and takes them to the store; see how he displays them with all the skill and taste at his command that their fresh beauty and perfection will influence customers to purchase.

Picture in your mind the vast areas under cultivation, the millions of capital invested directly and indirectly, the vast army of laborers employed, and it will be apparent that horticulture is second in influence only to agriculture and its allied stock industry.

Consider for a moment the work of the hybridist, how carefully and intelligently he must select the parent plants and care for them, then when the all important period comes, the pollen is ripe, the pistil receptive, the operation of fertilization is carefully, deftly performed. How patiently must he await the results, it may be one, two or a dozen years before the veil will be lifted and he will know the effect of his labors. Out of thousands of seedlings, he may not obtain one of value and he must try again. What patience he must cultivate; with what persistency he must work; what great hope he must entertain. But few are fitted for such work and none are ever recompensed in money. They enjoy the work because they love it and their great desire is like that of our esteemed and respected George W. Campbell, to be able, before their days of youthfulness are past, to obtain a plant that will be an improvement over anything now before the people. Nature is not always thus chary of her gifts, for has not the Wizard of Horticulture, Luther Burbank of California, succeeded in breaking up what heretofore were considered immutable laws and given to the world a host of new plant creations.

Think for a moment what horticulture has influenced these patient workers to accomplish. Is it possible for the human mind to realize that our beautiful fruits have been evolved from wild, thorny, puckery, uncivilized progenitors of the apple, pear, orange and peach? From these wild fruits or semblances of fruits have gradually unfolded our luscious, beautiful creations of today. Improvement and progressive development began with man. Steadily and persistently he has watched and taken advantage of any change nature has made it possible for him to effect. He takes the struggling plant that has outstripped its kind and places it in improved and congenial surroundings. Its mere existence is no longer threatened and it at once shows new and varied forms. The flowers take on a fairer and more delicate hue, improving in size and beauty by a slow and magical process, the foliage intensifies in strength and coloring to form a fitting background for the blossoms, and the maturing fruits develop a sweetness and lusciousness heretofore existing only in a potential state.

The horticultural influences have been woven between man and nature, until today, we have a most beautiful, useful and varied plant life, and men who spend their lives trying to solve the subtle laws which govern that life.

Comprehending the value of these influences, it is but natural for public spirited individuals to seek out ways and means to augment these forces that the greatest good may come, that knowledge of the when and how may be given to all who may seek. The state, realizing the value of horticulture, has organized various departments for its systematic development, has given us our great experiment station system, and fosters botanical gardens and magnificent public parks and gives appropriations to such bodies of men as seek to spread horticultural knowledge among the people.

Gentlemen, I ask that you lend your aid to perpetuate and augment these influences; seek in every possible way to spread the blessings of horticulture. There is much to be done among all classes, many only need a little help, others require constant teaching and example. The first requisite in ornamental horticulture is to clear up the front yard and keep the grass as a fine lawn. I have seen one such example spread its influence in a few years to a whole community. Such methods are worthy of our consideration and emulation. A little leaven is often sufficient to leaven the whole loaf.

Do not neglect the influence of horticulture on the plastic mind of the child; seek in love and deed to increase its interest in and study of plant life. If we are careful how we introduce our little ones to the vegetable kingdom, it might be possible in this way to solve the problem of "how to keep the boys on the farm."

The surroundings and teachings of the parents may be made such that the child's great desire will be to live with and love plant life and take great delight in nature everywhere. Who of you, as little children, does not remember the old apple orchard down the lane where your happiest childhood days were spent. True there were often pains and sorrows mingled with pleasures, but who of you would not be willing to sacrifice a larger space of time for just one more day of youth in the old orchard with the keen appetite for the red and golden beauties once so crisp and toothsome, and then there were the cherry and plum and peach trees delighting the eyes with their cloud of bloom and pleasing the palate with their wealth of fruit. The little child delights to roll upon the green grass and pluck the tiny flowers and carry them to its mother; should she take an interest in these offerings and drop a few words of wisdom on the susceptible mind of the little one, its childish nature will carry their imprint without knowing it, and it would likewise carry a reverse feeling, if the childish offering was pushed away with indifference or harshness. Then, surrounding the home with the fruit and vegetable garden, give the children the green lawn and bright blossoms for their companions. Teach them day by day their uses and beauties, a little at a time, give them trees and plants of their own, show them the principles underlying their growth, and I venture you will have so molded their natures that there will have to be a very strong reason before they will leave the place of their childhood and pursue a calling that leads them away from horticultural influences.

The great State of Ohio has been long and favorably known in the horticultural world through the eminent fruit culturists and specialists who have been born and lived within its boundaries. The influences these men exerted on our early horticulture cannot be estimated; beginning over half a century ago it gradually crystallized and formed into a pomological society and from this evolved our Ohio State Horticultural Society. This society not only interests itself in pomology but carries its work into every branch of gardening. It tries to bring such influences to bear as will tend to develop the great interests of gardening throughout the State. Its influences may be likened to that of the mother. Its office is to guide, watch and direct, to instruct and assist. It should have the support of every one who loves gardening, who loves fruit, flowers and homes.

The influences of horticulture are always with us, they are pressing on every hand. The little child is scarcely in the cradle before a bright apple, orange or other fruit is held before its eyes and it reaches for it; a flower is put to its tiny nose before it realizes what the sense of smell is; and so on down the whole life line and when the last tribute is paid to man flowers are the medium through which we express our sympathy and grief.

Great enterprises are seeking to use ornamental horticulture as a means of creating a favorable impression upon the public and their employees. Railroads are perhaps the pioneers in this direction, not only beautifying their grounds, but annually using thousands of dollars worth of cut flowers for their dining cars.

Manufacturers, realizing the good influences of gardening, are stimulating their employees in such work by offering prizes for the best kept premises. One of our great home periodicals, cognizant of the interest in this work, is making two branches of horticulture leading features of its publication this year. What would our great expositions be without the department of horticulture? Great object lessons where the eye may measure the perfection of products as produced from varied sections of our country, or, as at our State Fair, localities of our State.

Let me here digress a little from my subject to say that much good could be done at our fruit and perhaps other displays of products at our State Fair if a suitable person could be placed in attendance who would answer the questions of visitors relative to variety, soil and method of cultivation.

The Experiment Station Staff do this in connection with their exhibits, and see what a gathering of interested people are always collected about them. Introducers of new fruits are always on hand to give information as to what they have to show and they seldom lack for an audience. This goes to prove that when people see things, they want to ask questions about them and so get a better understanding of things seen. Knowledge gives influence and power and if the horticultural department of our fair is to increase its influence, then the visitor must be put in a way to better understand the varieties exhibited.

As I have already indicated, I believe the effort which will be crowned with the greatest results will be to bring horticultural influences to bear upon the children. This can be done in a variety of ways.

First, through home teaching and example; then in school life, both by text-book and various actual operations as may be determined by circumstances; by local horticultural and improvement societies, such as plant distributions to children and special prizes for them at exhibitions. On Arbor Day some special feature might be arranged that would interest the little ones. Our great State Institute system should take cognizance of the fact that the child of today will be the farmer of tomorrow and incorporate the idea of special subjects for the children and recommend that an entire session of an institute be devoted to the children, and if need be, employ lecturers especially adapted for this work. I believe there is room for advancement by working with the little people. Knowing the conditions, we fail of our duty if we do not set the influences at work along these lines. We may be discharging our obligations toward our own, but we must help others to see and do, or we fail to discharge our responsibility.

At the conclusion of the address of Mr. Cushman, President Begg said:

Ladies and Gentlemen, the subject is now before you for discussion. Any one wishing to talk upon the subject we would be glad to hear. There are certainly a great many horticulturists in this audience and we ought not to let this subject pass without giving it due consideration. Everybody is welcome to take part in the discussion or to ask questions. In fact we urge all to do so. Now is the time to give your own experiences and comment upon the different points raised by the speaker.

Professor J. G. Nau of Fairfield County: It seems to me this paper should not be passed unnoticed. I have nothing but commendation for it. I believe the time is near when agriculture and horticulture will go hand in hand. The speaker has very eloquently brought out that fact. I hope that sometime in the near future there will be a step in the direction making it incumbent upon the teachers in the public schools and particularly in the country schools to teach agriculture and horticulture. It is certainly refining in its nature and it will certainly cultivate observation. I heartily endorse everything that the gentleman has said in his paper.

Dr. W. I. Chamberlain of Summit County: I am sure this paper ought not to pass without some further words of commendation. The aspect of the case which the gentleman has just brought out is that which Professor Hunt I suppose will bring out tomorrow morning, and I know we shall all be very much interested in what he has to say in regard to agriculture and the school teacher. I do not know of any way in which we can have agriculture or horticulture taught in the public schools except by requiring the ability on the part of the teachers to teach it, and I do not know any place where they can get that ability except at our own state universities and agricultural colleges. When we rise to the level at which we shall demand that our children shall be taught something of the things that are to interest them all through their lives then we can have it, and I know we shall wait with a great deal of interest to hear what Professor Hunt can suggest tomorrow.

I want to give you a little incident which my honored associate, Mr. M. E. Williams, related to me the other day in the office. We were speaking upon this same subject. He said, "In the first school I taught, after school hours I brought in an ear of corn and stated to the pupils that I would tell them whatever I knew about that ear of corn, how it was grown, and how it originated and all about it." And he then proceeded to do so. He said, "You never saw little children so interested as they were." Mr. Williams is quite a botanist. The directors of that school district held a meeting and sent him word that "He wasn't hired to teach no sich sort of thing." They were farmers too. But they said, "He wasn't hired to teach no sich sort of thing, he was hired to teach readin', writin' and 'rithmetic." Now, we have to rise above that and in order to have these influences surround our children, as the able essayist has suggested, we must insist upon their being instructed. And I think the idea of special instruction at the State Fair in connection with the horticultural exhibit which the President of the Horticultural Society has suggested would be an excellent thing.

Professor J. F. Hickman of the Ohio Agricultural Experiment Station: It seems to me that there is one point left untouched, and I would mention that especially in the line of the kindergarten. Let the farmer visit his country school house, or let him recall the one he attended in his boyhood days and then ask himself the question if the example of the environments and surroundings of that school house are not sufficient to prevent any child from becoming interested in anything connected with horticulture? I think it is a burning shame to the people of the State of Ohio to have such school houses and school grounds as we do have almost universally. There are a few brilliant exceptions in which you will find nice lawns, nice trees and a good supply of out-door flowers. In place of having these surroundings, such as they are, if school teachers would only give these children a few practical lessons in planting trees about the school houses and in the keeping of the lawns and the planting of flowers, they would give them lessons which would be remembered by them as long as they lived. Not only that but you are starting the very idea of example which is handed down from generation to generation, and in place of a tendency down and down you are cultivating the tendency to look up to higher achievements.

Mr. A. Shirer of Montgomery County: I do not know where we are drifting. What is the object of our public schools? To lay a permanent foundation upon which to erect a well developed structure. The good Book, Mr. President, tells us that the wise man builds upon a rock, but the foolish man builds upon sand. Now here are our farmers — foolish farmers, if you please — erecting their education upon sand. It has always been a puzzle to me how you can teach horticulture in the public schools. There is only one way to get at it and that is to do it in the right way and that is to lay a permanent foundation. Now I believe, as well as anybody, in a complete, all-around education. But what must be done in our public schools to secure this education? I know what we can do. We can take up the subject of botany and teach it in a scientific manner and the child who thoroughly understands it will have a pretty fair knowledge of agriculture and horticulture. Now I do hope the farmers will not get so cranky and wild as to attempt this and that and the other thing just because it is new, and because it is the "fad." It is only the name of the thing after all. Horticulture can be nothing else but botany — that is one part of it and with it is included chemistry and so on. I do believe in having a thorough education but let us have the right kind of a one and give our children a broad education so that they can take up these subjects afterwards and learn them themselves. The great trouble with the people of today is that they are bound to do nothing unless the State of Ohio helps them (applause). Go back to the schools in Massachusetts, if you please, and there it has been said that every boy studied at home. They made that rule. Today, Mr. President, Massachusetts has less farmers in proportion to its population in the lunatic asylum than any other state in the Union.

A Delegate: Is there any connection between the two?

Mr. Shirer: There is quite a connection between the two. There the boys and girls study at home, but here I would like to ask if we are trying to raise up our children in the State of Ohio so as to have them fill our great asylums? If we listen to all these cranky notions about agriculture and horticulture as things to be taught in the primary departments of our public schools we are going to pave the way for the filling of our asylums by the children of the farmers. Now remember that I am in favor of a good, broad education, and if we have to go to the State University to get it, all right; but by all means let us commence at the bottom. The other day I was in Cleveland and I saw a building being erected where apparently they had commenced to put on the roof first. It looked a little like it, but upon a close examination I found, however, that they had a good superstructure, but actually they had commenced two or three stories up with their brick work and finished that up before they had commenced the lower stories. Let us not commence at the top and build down but let us commence at the bottom and build up; and ask the State of Ohio to give us a good public school system that is the best in the world, and which will teach botany, chemistry, biology, zoology, entymology and all the other "ologies" after we have laid the proper foundation (applause.)

Mr. Rankin of Fayette County: I do not think we should pile any more responsibility upon the common schools of the State of Ohio than is absolutely necessary, because it seems as though the farmers of Ohio will never be able to educate themselves up to a point at which they are willing to improve upon the present system, unless we place those schools upon a scale where the expense of conducting them will necessarily have to be increased, and thus we will simply be adding to the amount of taxes we are to pay. Right upon the floor of this house every attempt to improve upon that line was attended by failure last winter. And now as long as the community and the rising generation demand a higher and a better education, just that long we will have to take the steps in the direction of procuring it for them. I believe in putting upon the country schools of Ohio such demands that we, the people who support them, will be driven to the necessity of amending the present system. I believe in centralizing and grading our country schools. Placing a greater responsibility upon those schools will tend to bring us to the point at which we will have a betterment of this condition. So I think it is all right to take all of these things into consideration, teaching agriculture, horticulture, botany and everything else; and afterwards we will finally come to the conclusion that we have to look for something better than the present system of education in our country schools.

Mr. T. C. Laylin of Norwalk: The State of Ohio in its laws is already in advance of the farmers. Under the Boxwell law when a scholar graduates according to the conditions prescribed in that law, his township board may pay his tuition where he can acquire this knowledge of botany and the higher studies that are required in agriculture, because agriculture requires the broadest knowledge and the highest learning of any education. And yet when he goes back to the township boards of education they almost to a man utterly refuse to pay the tuition of the scholar that graduates under that law. And yet when a man is old enough to have no more children to go to school they will unscrupulously tax him to the end of his life so that others may have advantage of his money.

Professor C. E. Thorne of the Ohio Agricultural Experiment Station: It was my good fortune about a year ago to be given the opportunity to visit one of the graded schools in one of the larger villages of our state. I went into the lowest room in the school into where the little tots had come before they had learned to read. It was during the fall of the year and they came in bringing with them leaves which they found growing on plants around them on their way to school. Those leaves were carefully placed in little scrap books. This was done before the child could read or write. They were carefully placed in little scrap books, and as the term progressed they were taught something of the rudiments of reading and writing. Then they were taught to write some simple description regarding these leaves, where they had found them, what they grew upon, etc. Then in the next grade there was something a little higher than that. The child was expected to do a little more of this, and so on until the children were taking botany as one of their studies, and were expected to analyze plants and flowers and to give something of their history. Further along they took up other branches of natural science, such as chemistry. In one of the rooms as the children came in they were required to note the weather conditions on the instruments that hung at the door and to make a record of them. And at one of the windows there was a growing plant which the teacher had planted in the fall and the children were required to watch the growth of it and to make a record of it. They had watched its growth, its budding, putting out leaves, blooming, etc. They watched its growth from stage to stage throughout these processes. There, gentlemen, was a practical agricultural college and not a farmer's child patronizing it. It was in one of the schools of our cities. And let me tell you, gentlemen, that it is in our city schools today that we are finding these steps being taken towards the study of nature. You can go into the country and no attention is paid to it. You can go into the cities and they are awakening everywhere to the vast importance of this study, and they are taking it up, and the time is not far off, farmers of Ohio, when you will be left behind in your own vocation by the people of the cities if you do not open your eyes to the opportunities before you and improve those opportunities. The study of agriculture is nothing under the sun but the study of nature. And let us then take advantage of our opportunities and bring that study in its simpler forms into our country schools and carry it on as we may if we will but improve our opportunities. At the experiment station we have put out a couple of little bulletins devoted expressly to some of the simpler forms of nature studies. By some means a notice of these bulletins has found its way into the press of the state and they are being called for by hundreds and by thousands. And by whom? They are being called for by the teachers in our city schools; not by the teachers in our country schools. The cities are awakening on all hands to the importance of this line of study, and they will distance you if you do not, yourselves, wake up and be ready to meet them (applause).

Mr. J. L. Wyly of Granville: As a matter of course, we "hayseeds" do not profess to be as smart as the city people. We never expect to arrive at the height of eminence in sciences and in things that pertain to national greatness as do our friends in the city. But nevertheless I have marked one thing that in our country schools — I pay taxes in a city graded school, or in a town graded school, and also in a country school — the boys and girls are the best penmen and have the best knowledge of arithmetic and grammar and the common branches, of the two classes of children. A gentleman who sent his children to a city school said to me the other day, "My boy has been going through our schools and yet I have to send him to a writing master to teach him to do a little bit of business." These theories are all right as theories but we who were raised in the country know that every boy and every girl from the time of their early infancy see these plants and flowers growing and they do not need to learn some things that some of the children need that live in the city. There is a limit in all of these things and what we need is more thorough education in the elementary studies and not so much advancement without the proper foundation being laid for advancement. We have higher colleges for education in these advanced studies and if the parents of a child want their child educated in technical lines they ought to go to the higher colleges and not expect to get a technical education in a common school. I live in a higher college community. I help support them. But I tell you we are proud of our country schools and are not afraid of the city schools making such wonderful advancement. We are not afraid of the ignorance that you speak of. In our country schools we have good teachers, we have good schools where botany is being taught and some of these other branches of Nature studies are being taught. If they are not being taught, why are they not being taught? Most of our examiners come from the cities. Most of the men who make our laws and advocate these improvements come from the cities. Nevertheless if you go through the country you will find the country boys making their mark, and every man who is making his mark today in Ohio, as well as all over the land, are men who as boys received their primary education in these good old schools. Some of them received their early education in the old log cabin school house. No, gentlemen, I say, make all the advancement you can but you and I will never live to see the day when our cities will outgrow the progess made in rural districts in agriculture, in science, in morals and in everything that pertains to true greatness, honor and celebrity (applause).

Mr. William Markel of Pickaway County: What we want to do as farmers is to go out into our country school districts where we are teaching in our institutes and impress upon the teachers the responsibility that they owe to the rising generation in these particulars and let them bring about this improvement and force them to help beautify the grounds and do away with the things which are complained of. The complaint is an honest one and as a "hayseed" I acknowledge it. But I want to say to you that the best way to bring about this improvement is to bring this matter before our institutes in the future and impress upon the school teachers of the country districts the necessity of improvement in this regard. Let every farmer make a note of it and see to it that the teachers are impressed with the necessity of improvement and with the fact that the responsibility for improvement rests with them.

Mr. O. E. Bradfute of Cedarville: Mr. Chairman, I want to take exception to a statement made by a gentleman on the floor recently. I am not one of those who are willing to confess that the city school ought to outstrip the country school or that it is ever expected or intended to outstrip the country school. I am not one of those who are willing to sit down and say "we must expect greater things of the people in the towns and cites than we are to expect of the men in the country." I am one of those who believe that the backbone of this country is found in the agricultural districts and not in the city (applause). And I want to go further than that, I am one of those who believe that there is no man who requires a broader education, who requires a more scientific education than the successful farmer of today. I am not willing to say that the farmer shall be content with ordinary knowledge; that he shall be content with the ordinary studies that are contained in the curriculum of the common schools of today. But the farmer who is going to succeed in the future must be a man who has broadened himself out; who knows more than the simple matter of how to hold a plow; he must be a man who thinks; he is the man who will be the farmer of the future. Now how are you going to cultivate the art of thinking in the little child, let me ask you? I am not one of those that believe that the study of multiplication will ever cultivate very much in the way of thinking. I happen to remember as a little fellow myself when by a chance —and it was a mere chance — I learned from one of these teachers that was spoken of awhile ago as being a teacher who taught more than merely "readin', writin' and 'rithmetic" how a certain vine entwined itself about a pole. He was one of those men who naturally like to impart knowledge, and was fond of the study of nature, and I happen to remember in looking back upon my boyhood days a little experience right in the line with what has been suggested. He taught us how a certain kind of vine would grow around a pole in one way, and another kind of vine went around the pole in another way. That was simply a little lesson, but it taught me to observe. And the farmer of the future must be the observing man. I believe there is nothing that will teach a man to observe more closely than the study of nature. I am one of those who believe that agriculture and horticulture ought to be taught in the common schools (applause).

Professor Hickman: I have considerable sympathy for the man who has to discuss the subject of "Agriculture and the School Teacher" upon tomorrow's program. And I therefore move you that we turn to the subject under discussion, namely "Horticultural Influences."

President Begg: I would say that the question which is being discussed was referred to in the address of Mr. Cushman and it certainly is a legitimate subject for discussion, because it was brought before the institute by the gentleman who read the paper; otherwise I should have directed the course of the discussion in another channel sometime ago. But the two subjects are, unfortunately for the gentleman who speaks tomorrow, so closely allied that it is hard to separate them. I hope you will confine yourselves as closely as possible to the subject as outlined by Mr. Cushman in his paper.

Mr. Cushman: I take it for granted that this subject is about closed for discussion. The point that I wished to make in the paper was that the child is in a receptive condition; and it is with the child that we can make these influences felt the more easily. I took that position because it came directly to me in reflecting upon my own experiences as a boy. Why am I a horticulturist today? I will tell you why. It is a little thing but it is a fact. When not more than seven years old it happened to be my pleasure to be with Matthew Crawford, the eminent strawberry grower of Ohio, one day when there was to be a strawberry exhibition in East Cleveland. He made an exhibit of strawberries at that meeting. I have never seen finer strawberries since than those that were shown at that time. He gave me some of those strawberries to take home. I took them home. It made a lasting impression upon me. Now, what was the result? Being a child and being in a receptive condition, that little incident stamped itself so strongly upon my mind and my nature that since that time I have always been interested in the growing of fruits and flowers. Now you have missed one point in your discussion which I wish to make plainer than it was stated in my paper. That is that the parents can so influence children before they ever think of going to school that they will have a trend in the direction of horticultural pursuits, even at that early stage in life. When the little child picks up a dandelion blossom from the lawn and brings it in to the mother to show it to her, do not turn away and say, "Go out and dig up those dandelions and throw them away; they do not belong there," but explain to the child how beautiful it is. Explain what the beautiful yellow sheen of gold is upon the velvety lawn; and teach the child to take an interest in such things and in that way you will so bring the little child up that when he gets to be a man and seeks for an occupation he will think more than once whether it will turn towards horticulture or some other occupation.

President Begg: Much as we would like to continue this discussion we will now have to stop it and proceed with the next subject.

Mr. M. C. Morris of Shandon, O., then addressed the Institute upon the subject of

CULTIVATION AND BREEDING OF CORN.

Cultivation begins with the preparation of the soil. And preparation means more than the manipulation of the soil with tools. It means at least in part preparing the soil as to fertility for one or more years prior to the year in which the corn is grown. This part of the preparation means enriching the soil, adding to its fertility, or perchance restoring lost fertility and is *usually* accomplished by a systematic rotation of crops in which clover is the enriching factor, by a liberal application of manures or commercial fertilizers. In my experience and observation, commercial fertilizers are little used in the cultivation or preparation of ground for corn, and it is impracticable to depend on barnyard manures as a fertilizer for corn because it is impossible to treat a large enough acreage. Now, please understand me to say that the liberal use of stable or barnyard manures is in every way conducive to the best results when properly applied to ground that is to be planted to corn. But so many conditions arise that make it impossible to manure acreage enough, that I am justified in saying, that while barnyard manures are in every way desirable, they are not to be depended upon as fertilizers for corn.

Now, let us be clear! I know that in portions of the state where only one crop of corn is grown, and that after a stiff timothy sod, it is possible to prepare a good deal of that ground with manures. I know that in some years, as in 1896, we were able to draw out on clover sod without injuring the ground. But in our latitude in southern Ohio, where we grow three or four, and sometimes five crops of corn in succession, we never have a spring in which it is safe to draw out manures on open stalk ground. Then we are back to clover as the great fertilizer for corn, and according to the condition of the soil, according to the growth of clover — to the root growth and to the nitrogen producing tubercles upon the roots, will enough fertility be stored to answer for one, two, perhaps three or even more successive crops of corn as the case may be.

Ere this some writers would have told you on what kind of ground they preferred to sow corn. I had a mind to omit it. They, in most cases, have told you they preferred warm, black, sandy loam, overflowed river bottom. It used to be thought that this was the only soil that could produce great crops of corn. But in this day of intelligent, aggressive agriculture, with thorough drainage and tillage and systematic rotation the upland farms —although sometimes heavy in clay — outstrip the bottoms in the production of corn. And the light prairie soil of the great West, that blows through every crevice and away with every gust of wind, rolls out the golden grain without stint.

We are now ready for the plow. When shall we plow? If your soil is a warm, black, sandy loam as deep or deeper than your plow and the drainage perfect you can plow in the fall with no harm, and the possible advantage of being ahead with the work, and possibly a farther advantage of plowing out a few insect enemies to the action of the frost. But if your soil is a black tenacious upland, a clay subsoil, or perhaps a clay soil, it is far better to plow in the spring. The winter is our wet season. If the ground has been plowed in the fall, the sharp line of cleavage made by the modern plow share, destroying those air tubes made by the earth worms, has so interfered with the natural drainage or percolation that the heavy soils are sure to run together and be found in a sad, soggy condition in the spring. Again, the anxiety to be afield early in the spring leads many to plow too early, while the ground is yet wet and turns over sleek and shiny from the mould. Better far wait until it is dry enough to crumble nicely. My experience has been that the ground has done best when plowed late, and the corn best when planted as soon as possible after plowing. So, my fellow farmers, whether to plow in the fall or spring is in my judgment purely a matter of soil. After years of persistent effort fall plowing has been entirely abandoned in my locality.

How shall we plow? So far as I have time to detail this matter, plows are built on two lines or plans of construction. The long, straight mould that turns the ground upon edge and the mould with a sharp angle that crushes and breaks the ground. The cry of the times is light draft, and means the long, straight mould. I use a plow with a peculiar whip to the mould which leaves the ground in a loose, broken condition. I use sixteen-inch, three-horse plows. As a matter of economy, I think that a man can as well do sixteen-inch, three-horse work, as ten or twelve-inch, two-horse work.

How deep shall we plow? This is a mooted question and probably never will be solved except as each individual farmer does so for himself. Some of our agricultural teachers sent out by the State Board strongly advocate extremely shallow plowing for corn; some, so shallow as four inches. In all kindness, I believe that advocating this extreme with the average farmer is unwise unless the conditions and restrictions are made very open and elastic. I am still on the list of deep plowers, approximating eight inches as nearly as possible. The last few years have been pregnant with experiments and experience, and the best thing we can do in this friendly discussion is to keep close to the averages and to the consensus of opinion.

In a three-year test at the Indiana Experiment Station, plowing four, six, eight, ten and twelve inches deep, eight inches gave the largest yield for one year and the largest average yield for the three years; twelve inches gave the largest average yield for two years, but in the third year the average was a little below that of eight inches, and four inches was lowest in every year and in the average. In the "Breeders Gazette" Corn Contest in 1896 they plowed from four to fourteen inches deep, but the more successful plowed from six to eight inches deep. Now that the ground is plowed some insist on rolling and dragging and harrowing until the surface is thoroughly pulverized before planting. I have been skeptical on this plan and shy of it for several years. At this time of year the ground is apt to be damp or wet underneath and the driving of horses and dragging of tools over it has a tendency to pack and harden the substratum and make it difficult for the corn roots to penetrate. If the season is well along and the ground warm enough to plant, I prefer a little light work and then push the planter. Let the corn be in the ground getting a start, for you will have plenty of time to work the ground after planting.

Our corn is now planted, either in hills or drills, it matters not which way. Neither has any advantage over the other except in the mind of the individual farmer. The only detail worth mentioning is that we farmers in southern Ohio plant in deeper furrows than they do in some sections. We do not claim that this is the only way, or that it increases the yield much, but we do think that it helps us to fight the weeds and that all deep work helps to resist the effects of a drouth. Our corn is now in the ground and we again face mooted questions.

There are probably as many different methods of cultivation as there are different men and each method, according to locality, may have some merit. It is not my disposition to criticise other methods, but to give you mine and hope thereby to induce discussion. In the first place, I never harrow corn. Now, I know how this will strike a larger portion of this audience, but my defence is that by this time the ground has had one or perhaps more heavy rains and has probably been rolled, and to go over the ground now with an old dull A or double A harrow has a tendency to further harden the ground and make it more difficult for the sun to warm the ground about the roots. If your soil is warm, mellow, and sandy, I believe the weeder is the solution of this first working, but for the heavy, black or clay lands, the weeder doesn't solve the problem. So we go on with our two-horse cultivator, spring shovels, four shovels on each side, and by the time they have gone twice in each middle the ground is thoroughly loosened up. We follow in close succession with the second, third and fourth plowings. If any change is made in the cultivation, we substitute two five-inch shovels for the four narrow ones for the fourth plowing. This is not always done. A great deal is being said and written about making the cultivation more shallow after the first plowing. I do not do this, I plow as thoroughly as possible, about six inches deep, although I frankly admit that the consensus of opinion is decidedly in favor of shallower cultivation, and for the average farmer this is all right. The theory of shallow cultivation is founded upon root pruning and is sound. If you find that you are pruning roots, you would better plow shallower. The axles of my cultivators are three feet high and this means that the plowing must be all done by the first week of July. If the plowings have been in close succession, as they should be, the constant disturbance has held the feeding roots back or driven them into undisturbed ground, and a better result will follow deep plowing up to the first of July, than by a skim culture, expecting these feeding roots to gather nourishment from a hard impacted earth.

Corn is supposed to be by some a shallow feeder. This is a mistake. Corn is a deep feeder, but has the faculty of adapting itself to adverse conditions and can be made to feed shallow. Professor King in 1892 made interesting experiments upon the development of corn roots under ordinary field culture by washing out plants at different stages of growth. Forty-two days after planting the plants were eighteen inches high. The roots of two hills had met and passed each other in rows two and one-half feet apart and had grown to a depth of eighteen inches. The surface roots sloped gently downward and those nearest the surface were eight inches deep. At the last plowing, when the corn was three feet high, the roots occupied the entire soil to a depth of two feet and the surface roots were six inches below the surface of the ground. At tassel time the roots fully occupied the soil of the entire field to a depth of three feet and the surface roots were not five inches below the top of the ground. At maturity the roots had gone to a depth exceeding four feet and the surface roots were within four inches of the top of the ground.

Manure has been buried over four feet deep and corn roots have readily gone and fed upon it. It is not always easy to determine, even by experiments, what is best, and in all public statements I try to keep near a safe average and to let the audience carry some of the burdens. One careful experiment has shown that on a plat where absolutely no cultivation was given, sixty-eight bushels per acre were produced, while on an adjoining plat under thorough tillage (shallow) only seventy bushels per acre were produced. Now, we cannot possibly plow an acre of corn four times for two bushels of corn, and yet the most of us are not willing to accept these conclusions and stop cultivating. But I firmly believe that the extremely shallow fad will go the way of the blue grass fad. And now, in closing this part of the subject, let me say that the question of how deep we shall plow or cultivate will some day be solved for us by the amount of available or soluble fertility found by analysis in a given depth of earth. Some of the things that Sir William Crooks said in "Nitrogen and Wheat" are as fully applicable in corn cultivation.

In opening the second part of my subject, corn breeding, allow me to quote from Dr. Sturtevant, than whom we have no better authority, who says: "The improvement of seed corn through systematic effort, by careful study of what facts we possess, has scarcely yet attracted the attention it deserves. It is for farmers to assist by demanding good seed and paying remunerative prices and that a change to improved seed corn by the average farmer would increase his crops at least fifty per cent." Let me supplement what Dr. Sturtevant has said by adding that farmers are not giving improved seed corn the attention that it deserves. Intelligent farmers all about me can give the pedigree and performance of all the great trotting sires, can tell you about the Marys, the Cruikshanks and Bateses, can recite Poland China pedigrees till you can not rest, and know absolutely nothing about the pedigree of this most important crop, corn. And if they select their breeding animals with the same carelessness that they do their seed corn, they would raise a sorry set of nondescripts, and *vice versa*, if they selected their seed corn with the same care and intelligence that they do their breeding animals their corn crops would be enhanced fifty per cent.

To further illustrate this carelessness or ignorance on the part of farmers: two years ago I met a neighbor going over to another neighbor's place for some seed corn. I asked him what variety he expected to get, and he said he was going to get a dent corn. Well, of course he was, he could not get anything else in the way of field corn in my locality. Last spring I met in my village a wealthy and intelligent farmer who said, "Well, I have been over to your neighbor's for some seed corn." I said, "What kind are you getting?" He said, "A Leaming, I believe it will do well on my farm." I stepped around to the back of his wagon and looked in; he had white corn. And so I was driven to the botany to learn the difference and, although we are constantly using these terms, I doubt whether one man in twenty-five in this audience can tell the essential difference.

In an intelligent discussion of this subject it is essential to lay down a few laws or principles to start from. First, that the law of sex runs through all plant as all animal life. Second, that there seems to be some obstacle or repugnance in nature to self fertilization, or inbreeding. Third, that by heredity, like produces like. Fourth, that corn is very sportive with a strong tendency to atavism. Now, under the first principle, corn botanically speaking is a grass and most grasses have the male and female organs, and the same pod, and they mature about the same time, making it very difficult to cross-fertilize; but to our great benefit this is not the case with corn, for the male organs are found at the top of the stalk in the tassel, while the female organs are lower down upon the stalk at the ear, and the breeding or the pollination is accomplished by the dust or pollen from the tassel falling upon the ear. Under these laws of nature or conditions, it seems reasonable to suppose that if we were to take the pains we could control the breeding of our varieties. Let me illustrate this. If you were to take a plat of ground and plant it in alternate hills or rows with yellow and white varities, both pure varities, if when the tassels begin to stoop you go through and take off all the white tassels, then the yellow variety will be as pure as before, because the maternal and paternal side are both yellow. But the white hills or rows will be cross-bred or mixed, because the female or maternal side was white and the male or paternal side was yellow, and you will find both white and yellow kernels on the white stalks because only yellow male organs were left to pollinate the whole plant. Since the above is true, and since prolificacy or large yield is our desire, it is essential that the paternal as well as the maternal side be prepotent and strong since every stalk and every sucker in the field produces a tassel and many stalks do not produce ears and almost no suckers produce ears, it follows that these barren and impotent stalks should all be cut out or detasseled so as not to fertilize the stronger, better plants; for this is essentially, yes, worse than breeding the registered cow to a Pennyroyal bull. This is a point that every farmer can and should observe and henceforth no barren stalk will be allowed to fertilize on my seed plat.

In regard to my second principle, that of self fertilization, it is observed that a single stalk of corn growing by itself isolated from the other corn, say in the middle of a potato field, no matter how strong and thrifty, will seldom produce a large, perfect ear It is now conceded that corn requires cross-pollination, and the principal reason is that the pollen of the stalk has matured and fallen before the stigmas or silks were out to receive it. This seems to be Nature's wise provision against inbreeding.

Prof. Lazenby, in an article on the "Dichogony of Indian Corn," says that, as a rule, the discharge of pollen begins from two to five days before the silk appears, and in experimenting with six varieties of dent corn, he found that ninety-six per cent. of the stalks began to shed pollen before the silk appeared. Seventy-six per cent. had shed half the pollen, and thirty-two per cent. had shed all the pollen before the silk appeared.

Prof. Lazenby's second general conclusion is that in a field of any size corn is usually well pollinated, owing to the excess of pollen and the duration of the time of flowering, but to secure perfect pollination of small areas seed should be planted at different times, or different varieties that bloom in close succession should be used. His third general conclusion is that imperfect ears are due not alone to imperfect pollination, but to imperfect ovules as well. Ears that are not filled out at the tips are usually so because flowers here were poorly developed and may be corrected by better selection or by better cultivation. Prof. Lazenby admits that under certain conditions it is necessary to make a later planting or to plant varieties that will bloom in succession in order to fully pollinate the ears.

Dr. Sturtevant and other experimenters agree that since the tip grains are the last to become impregnated, ears are frequently not filled out at the tip from a lack of pollination. These conclusions do not conflict with those of Prof. Lazenby. I had a very beautiful deep-grained corn called Golden Yellow, but it was too late in maturing from central Indiana north. I also had a variety called "Sibley's Pride of the North," a very early variety, but too small to be profitable. I had noted the difference in the date of the two varieties coming in tassel and found it to be between four and five weeks. One was an extremely early and the other an extremely late variety. I selected a plot entirely away from any other corn and planted every other row in Golden Yellow and then waited four weeks and planted the remaining rows with Pride of the North. I then cultivated well and as soon as the tassels began to appear I went through and cut out all the tassels of the Pride of the North variety. At maturity I selected some of the best ears of the Pride of the North as a foundation to establish a new variety, Todd's corn.

About the first of May prepare the plots and mark them off both ways with a shovel plow; then plant four rows and leave one, thus planting the plot by leaving out every fifth row. Then in about two weeks plant the remaining rows. This second planting is for the purpose of keeping up a supply of pollen to completely fertilize all the silks on the tips of the first planting, thus enabling it to grain out well over the tips of the ears, and as soon as the tassels begin to appear I go through and cut out all imperfect and barren stalks, leaving nothing but the most perfect ones, just the same as I select breeding sows and boars.

The butt and tip grains are especially valuable. Now, I will explain why I do this. The butt grains come to tassel first, then the middle grains, and the tip grains come in tassel a week or ten days later than the butt grains. This is Nature's method of supplying pollen to complete the fertilization of all the grains on the ear. This is the reason that I defer planting every fifth row in my special plot eight to ten days and then plant it to assist nature to complete her work of fertilizing every grain in the ear. This is a point in the improvement of corn that should be very closely studied, and it conflicts with a very common practice among farmers to nib their seed corn. Now, if they want to be convinced that they are wrong let them select a small plot as I do and take some well-developed ears that are perfectly grained out over the tip, but shell off an inch or so of the tip grains and not plant them. Then next year do the same and they will find that in a series of three or four years nearly every ear in the plot will show about an inch of cob at the tip with no grains on it. This not only detracts from the beauty of the corn but amounts to a great loss on the main crop. I believe that Mr. Riley has the right idea in crossing two corns, or propagating a new variety. Again, he is bent on giving the new variety every opportunity to grain out over the point to make a complete variety. Whether we agree with Mr. Riley in every detail, or not, doesn't matter. We must admit that he has his face towards the light, and it were far better if more of us were working along the same lines.

The third point, that "like produces like," has been the great sheet anchor of the American corn growers. Of the great army of corn raisers only a very few have propagated new varieties or experimented intelligently. Of the vast amount of corn produced every year only a few varieties can lay any claim to special breeding. Prof. Plumb in his book on Indian corn only enumerates fifteen varieties of dent corn; there are probably a few more, but the wonder is that there are not over a hundred pure varieties of common field corn. My next statement may seem at variance with this third point and takes into consideration the last principle, the strong tendency to variation in corn. Like only produces like whenever a condition is removed that would produce a variation. It is a fact that a herd of common stock or a flock of common barnyard fowls can be raised to a high degree of merit by constantly using males of improved pure breeding. This is the law of variation rather than the law of likeness. The law of likeness precludes the possibility of the offspring being better than the parent stock. In a wise provision of Nature corn has been made more subject to this law of variation than other cereals, so that by working in proper lines and methods we are able to *improve* the variations. The law of variation deserves more study than the law of likeness. We have not time to detail many of the conditions that induce variations, but climate, moisture, dryness and heat often change the growth and character of the plant. If the character of soil has an influence on the cattle or horses that graze upon it, how much greater must be the influence on plants grown upon it.

In the warm, alluvial soil in my latitude, jimson weeds grow six feet high and five feet across; yet last fall, owing to drouth, I saw this weed come up and mature a full pod of seed at a height of only six inches. The morning glory, that grows luxuriantly in my locality to the top of the tallest stalk of corn and then reaches out and embraces four or five more hills, will, under adverse conditions, mature seed and not grow more than two inches high. These illustrations are cited to show what plants will do under varying conditions. Corn is not so persistent in reproducing itself under extremely bad conditions as some of these weed pests, else we might be encouraged to idleness, but along other lines is no less subject to the law of variation or varying conditions.

Dr. Sturtevant has said that the Washakum, an eight-rowed flint that he propagated and in breeding considered the strongest corn of his knowledge, when removed to another locality under other conditions of soil and climate would change some in color and have ten or twelve rows. I can further illustrate this by citing the case of the Hickory King, a corn called historic corn, that it would seem to me is showing sporting tendency to atavism. Some corns are particularly strong in some one feature. Some corns will produce one color of cob under every other variation, while some varieties will produce different colors of cob and still seem to be a pure variety. A New England red flint corn is said to be so strong in the color feature that no matter how mixed or crossed or varied the conditions it always produced red corn. These things illustrate the strong and weak features in varieties, and in growing a particular variety we should try, if only by selection, to transmit the strong features and eliminate the weak.

For a term of years I have been improving a variety of yellow corn. Ten years ago red ears were quite frequent. Now we never see one. A few years ago I crossed — or I guess I should say mixed — Henderson's Golden Beauty with my seed. The result was a small percentage of white cobs. Since then I have eliminated the white cobs, so that we no longer get them.

Last spring I grew five acres of Riley's Favorite and five acres of Hammond's Favorite in separate fields to test their merit in my soil and to observe the time of flowering so as to properly cross with my corn. I shall not use either. I shall not cross another corn with my variety without first growing a crop of it on my soil separately. Every farmer should persistently stick to one or two varieties and push them to their fullest perfection and yield.

The higher success in corn growing depends on three factors: First, manure or fertility; second, cultivation; third, selection of seed, and all our best authorities agree that the third factor — selection of seed — is by far the most important factor. Sturtevant divides the last factor into three other important points. First, prevent pollination from infertile stalks; he says that after practicing this for two years with the Washakum variety the good effects were strongly evidenced. It is a fact, corroborated by many close observers, that we now have more barren stalks in our older corn districts than were noticed years ago. Progressive farming means that these must be eliminated and I think by the means here suggested. Second: It is of advantage to select seeds from stalks that produce twin ears, for then if the barren stalks have been removed we are certainly encouraging prolificacy, we may not often get the two ears, but in strengthening this tendency we are reducing the tendency to barrenness. Third: This point grows out of the second and is a theoretical point in plant prepotency and will hardly appeal to the average farmer in this bustling, busy age. It is that where two or more ears are developed on one stalk, the upper ear has the advantage in prepotency, but if a lower ear develops perfectly it shows unusual strength in being able to overcome the difficulties of its position, and for this reason should be used for seed.

Now, friends, I have probably detailed some things that may not seem practical to every farmer in Ohio, but I firmly believe that every farmer should improve his seed corn and thereby his crop. First, by selection; second, by controlling pollination in crossing; third, by eliminating all barrenness.

"The rose may bloom for England,
The lily for France unfold,
Ireland may honor the shamrock,
Scotland her thistle bold,

But the shield of the great Republic,
The glory of the West,
Shall bear a stalk of the tasseled corn,
Of all our wealth the best.

"The arbutus and the golden-rod
The heart of the North may cheer,
And the mountain-laurel for Maryland
Its loyal cluster rear;
And jasmine and magnolia
The crest of the South adorn;
But the wide Republic's emblem
Is the bounteous, golden corn."

At the conclusion of Mr. Morris' address, President Begg said: We will now have a short time to give to the discussion of this important topic.

Mr. William Markel of Pickaway County: Mr. Morris has come here to instruct the farmers of the great State of Ohio in the growing of corn and he has told us that he doubted whether one farmer out of twenty-five knew the difference between "dent corn" and "flint corn", and yet he has sat down without telling us (laughter and applause). Down our way we understand the difference between dent and flint corn is that flint corn was simply a corn that had been selected in that direction for many years for hominy, and what they call flint corn we call hominy corn. I thought he might as well have asked us the difference between a shepherd dog and a Gordon setter because they are both dogs, although there is considerable difference between the two. One of them goes out and finds the stock and brings it in, but if you send a Gordon setter out to drive the stock, if the stock do not go he just naturally sits down and makes a point. Now the only difference is that these dogs have been bred for perhaps two or three hundred years with a particular purpose in view. We have pop-corn. Now what is the difference between pop-corn and dent corn? The only difference, as we understand it, is that one pops and the other does not. If Mr. Morris can tell us the difference between dent corn and flint corn I wish he would do so, for I would not like to go home from this institute of the great State of Ohio without knowing. I came here to learn something.

Mr. Morris: I expected some one would ask that question. I think though he is mistaken in regard to flint corn being the same as hominy corn. My understanding is that hominy corn is usually a starchy corn and that is a dent corn. The best classification I have been able to find of corn is pop-corn, sweet corn, dent corn, flint corn, soft corn and pod corn. Pop-corn is so named because around the germ is a little ring or circle of oil which is not found in other corns and when this oil is heated to the explosive point it explodes and turns the corn inside out. That is pop-corn. What is usually termed sweet corn is a corn that has almost no starch in it. If there is any starch it is the merest little bit and is mostly what is termed by some as corneous matter, or sweet glutinous matter. Dent corn is largely made up of starch, and the starchy matter extends from the bottom of the grain clear to the top of the grain, that is the soft part of the corn, and that is the part of the corn that becomes indented when it shrinks or dries. That is what dent corn is. Dent corn has the corneous matter, or glutinous matter, along the sides of the kernel which does not extend over the top of the kernel, but stops along the sides and is a little heavier at the bottom and tapers towards the top of the grain, but flint corn has this corneous matter clear over the top and has less starch. Therefore the outside will cure smooth, being composed of this hard, corneous substance. That is the difference between dent and flint corn scientifically as I understand it from the standpoint of the botanist. Besides this we have soft corn. That is a southern corn and there is absolutely no corneous matter in the kernel, simply the germ and a mass of soft starchy substance; it is a sub-tropical product. Pod corn has the husk around each individual grain. I hope I have made that clear.

President Begg: Are there any other questions or discussion upon this topic? If there are none I will now have the pleasure of introducing Mr. J. Warren Smith, Director of the Weather Bureau in this city, who will address you for a few moments upon what the Bureau is doing for the farmer.

Mr. J. Warren Smith of the Weather Bureau, at Columbus, Ohio, then said:

Ladies and Gentlemen: — Secretary Miller has asked me to come here and say a few words about the work of the Weather Bureau in its relation to agriculture. First I want to give you a general and special invitation to call at our Weather Bureau office while here in the city. We have some very interesting instruments there and we shall be very glad to show you how we manufacture Columbus weather. We are not getting a very good article today but really we did not know of the meeting at the office until last night. We will try to do better for you after tonight. (Laughter and applause.)

First, what is the United States Weather Bureau? It is the branch of the Department of Agriculture which was formerly the United States Signal Service. We were transferred from the War Department to the Agricultural Department in 1891 because our work was so closely connected with the agriculture of the country. There are about one hundred and sixty regular weather bureau stations scattered over the United States. The Bureau is officered by live, active men. The men connected with the climate and crop work of the Bureau must be practical farmers. Many of them, I might say, are graduates of your agricultural colleges in the different parts of the country. Our Chief of Bureau is a thoroughly practical man, a man wonderfully active and energetic, and a man who has exceptional executive ability. We are led and encouraged by two men whom you know to be thoroughly practical business men and farmers, Hon. James Wilson and Col. J. H. Brigham, the latter of Ohio.

What does the United States Weather Bureau do? If you could take a bird's eye view of the country tonight at about fifteen minutes of eight Eastern

Time, or seventy-fifth Meridian Time, or twenty minutes of seven Ohio Time, you would see the observers all over the country climbing the stairs to their instrument shelter taking the exact observations of the barometric temperature, the conditions of the wind and clouds, and everything in connection with the weather, and, after deciphering it, telegraphing it to the central office of Washington and to the other large cities of the country. On receipt of the telegrams the different conditions are indicated on maps of the United States, the waves of high or low air pressure, the cold or warm waves, the extent of cloudiness and of precipitation of rain or snow, are put before the eye of the forecasting official. Then he has one grand view of the atmospheric conditions of the United States. Twice in twenty-four hours these observations are taken and telegraphed to the central office. In connection with, and in addition to, the regular weather bureau stations of the country there are over three thousand volunteer observers who are recording every day the highest and lowest temperature and the precipitation. In the State of Ohio we have about one hundred and forty, or one hundred and forty-five I think, to be exact, volunteer observers who without pay are taking observations with accurate, reliable instruments furnished by the bureau — taking observations of the temperature, precipitation, etc., and sending in reports once a month to the central station at Columbus. The object of all this is to determine the climate of the different sections and peculiar or interesting meteorological facts in those different sections. So you can see there is a very valuable mass of data constantly being collected. In addition to this, through the summer season there are in this state between four and five hundred crop correspondents who report every week the general conditions of the weather and the effect that it is having upon crop conditions, and this matter is tabulated and issued in the monthly reports of the monthly bulletins which we send free, and the weekly reports of the weekly bulletins which we issue a large number of and distribute pretty generally over the state. We try to send to every post-office in the state if we can not send to individual farmers. The forecast officials on receipt of the telegraphic report from the weather bureau stations make their forecast warnings. Now what benefit are they, and are they accurate so far as the general public is concerned? The forecasts are made about nine o'clock in the morning based on the eight o'clock observations for the coming night and the following day. Their accuracy is between eighty-eight and ninety per cent. We try to tell the exact weather conditions. If it is going to rain or snow during the night and become clear the next day we say that. If the temperature is going up five or six degrees during the night and higher the next day, we say that; and in addition to the general forecast of daily weather conditions there are the warnings which are probably of the most money value. It is estimated that along the Atlantic coast, if one of these West India hurricanes should sweep up there without warning, over two million dollars worth of property would be lost, and it is a fact that within the past ten years no West India hurricane of considerable energy has passed up the Atlantic coast without warning signals in advance being displayed by the weather bureau; thus giving the opportunity to the shipping interests to protect themselves. In the interior we have in this section the emergency warnings; warnings of especially cold waves or heavy snows or high winds. These are telegraphed particularly to postmasters. If any of you are interested in any way in the forewarnings of cold waves through the winter, or of high winds, or heavy snow, you may learn of your postmaster whether he is on the list to get warnings from this office, and if he is not, ask him to write to the central office at Columbus and he will be put on the list. We have written to nearly every postmaster in the state asking him to talk with the business men of his town and community and ascertain whether they want these warnings or not, and whether they will be of any benefit or use, and if they will to report that fact to us and he is immediately put on the list and furnished with these reports. The cold wave warnings, warnings of a drop in temperature of twenty degrees and warnings of a drop to or below freezing, are sent out to any town or community requesting them and all at no expense. This may not be of particular interest to all, but it is a fact that the warnings sent to the raisin growers of California during the past years have been of the utmost value to them. There has not a rain occurred in their locality without a warning having been sent to the raisin growers several hours in advance of the storm, and only one warning has been sent out without a rain following the warning. The weather bureau officer in charge of the bureau at San Francisco has his system so well perfected that within one hour from the time he issues his warning he can reach every raisin grower. He has an arrangement with the telegraphic division of the railroads for sending out these warnings. In this state we are attempting to distribute these daily weather forecasts as widely as possible. We have eighty different points in the state under the control or direction of this office to which we telegraph these daily forecasts and furnish them postal cards addressed to business men and the postmasters of smaller postoffices around them who desire the information. There are a good many places in the agricultural districts where there may not be a telegraph office and where it would cause considerable expense to the bureau to telegraph to these places; but from these eighty points we supply about four thousand different places in this state with the forecasts and warnings by postal cards. We furnish the cards all addressed. If any of your postmasters do not get these daily forecasts and warnings, have them write to the Columbus office to see whether it is not possible to put the office on the list. We have these stations scattered all over the state in the best mail distributing points and we shall be only too glad to send these forecasts to every postoffice in the state that can be reached. In this city within the past two weeks we have begun putting these forecasts in the street cars. Perhaps some of you have seen them since you have been here. I may say it is meeting with great favor indeed, and we are urging the forecast distributors in these eighty different points of the state to interest the railroad companies in their sections, wherever there is an electric railway, to display these warnings in their cars. Probably most of you remember that a number of years ago the flags or symbols were displayed on the steam cars. These, however, go very fast and travel through an unpopulated district to a large extent and were therefore of comparatively little benefit. But with the electric cars it is different, and if you can interest the corporations operating such cars to put some sort of weather signal on the car it will certainly be of great value, particularly where they run out of the cities into the suburban districts. We distribute in this city or display in cars these weather forecasts in probably one hundred cars. The Columbus Central line running to Westerville is going to display the symbols or flags on their express cars which run from High Street in this city out to Westerville, about thirteen miles away through a market gardening section. The Grove City line is now displaying flags on the cars running to Grove City, which also runs through an agricultural and market gardening section, and they have reported to me that there is a great deal of interest being taken in the display of the flags and a good demand for an explanation of signals. They attach a very small flag to their trolley rod and find that it works very satisfactorily indeed. It would seem that the flag would get wound around the rod and thus not be able to be seen and that a flag staff set on the corner of the car would be better upon which could be displayed a small flag, or a small symbol. I wish to urge upon you particularly the advantages of getting these daily weather forecasts and warnings of cold waves or emergency warnings in your section of the country, and I shall be glad to answer any questions in regard to it, or the work which the weather bureau is trying to do for agriculture. I simply wanted to take up a moment of your time to talk about the matter and will close by thanking you for the interest which you are showing in the work which the weather bureau is attempting to do for you.

President Begg: We are certainly very much obliged to Mr. Smith for his very instructive and interesting remarks. We will devote a few moments to a discussion of the subject, or give any of you an opportunity to ask such questions as you may desire of the gentleman who has just spoken.

Mr. A. Shirer of Dayton: It strikes me that the speaker has put the cart before the horse. I have no objection to these weather reports for they are all right and proper in their place, but if it is a movement in the interests of agriculture and the farmers, why don't they give us free mail delivery first so that we would be in a position to get these reports (great laughter and applause)? I would like to know if the farmer has not something else to do than to go to the postoffice once or twice a day to see what kind of weather Uncle Sam is going to send us. If they would just turn the thing around and give us free mail delivery and then send out these reports it seems to me that would be the better course.

Mr. Smith: Of course we are not connected directly with the postoffice department, but our real object in pushing this improvement among the farmers as far as possible is that you may use this as a means for getting your rural mail delivery (applause.)

Mr. Cory of Ross County: Mr. President, I would like to speak a word in regard to these forecasts. For my own individual use I do not like this kind of forecast. It is true it comes every day, but I prefer the weather map, and if you study the weather map correctly and become interested in the subject you can forecast the weather from these weather maps with a very good degree of certainty for three or four days beforehand. This card will probably say, "rain, or snow to-night," and "warmer tomorrow," or Thursday, and this forecast may just exactly suit Columbus, or it may suit fifty miles north of Columbus, but not suit fifty miles south of Columbus at all. While you can take the weather map issued at Cincinnati or Columbus — and the further west usually the better — you can take that map and study the barometric pressure and the temperature for at least forty-eight hours and can arrive at a conclusion that will satisfy the farmers, I think, much better than you can from these postal cards that you may receive periodically, or even daily. I would like to talk with the gentleman some and not take up so much of the time of the Institute in regard to the further distribution of weather maps. If they are hung up in the postoffice it does not amount to anything, possibly not one person in a hundred that goes to the ordinary country postoffice in a small town will pay any attention to them. Even if there is one in a hundred that looks at the map and notices the lines that are upon it they are simply confusing to him, as he does not understand it, and goes away saying, "The government is put to a whole lot of expense and we fellows will have to pay for it when it does not amount to anything." The reason for his believing that is because he does not understand the map. I think the weather maps are more important things to distribute among the farming public — that is the individual farmers — than are these postal cards. I have been receiving these cards for about eight or nine years and I have been receiving maps for six or seven years, and for my part and in our locality we can very well do without the cards. The map I receive is issued at Cincinnati and leaves the postoffice about half past 10 o'clock and I get it ninety-six miles east at 3 o'clock and the farmers and gardeners and those that are interested in the weather and the conditions of the weather will make it a point to be at the postoffice about the time that the weather map comes, because as a usual thing they know that I am there at this time, and they get my explanation of it, not for today nor for tonight nor tomorrow in the forenoon, but a general explanation of what we may expect. This does not take in any geographical conditions that may exist over the different parts of the state, but that is one important feature. We may see today that there is a cold wave existing in Montana and we can know from the state of the barometric pressure the direction it is about to take. We must take into consideration the amount of pressure, high or low temperature we have in that locality and we can figure that it will be here in thirty-six or forty-eight hours from Montana. If the temperature here is up to sixty-five or seventy degrees, or if we have a very dry temperature or a dry condition of the atmosphere it will take it from twelve to twenty-four hours longer to reach here than if we had the conditions we have today or we had yesterday. These things need to be studied from these maps. It takes time to do it of course, but as I said, I think the government would benefit the farmers more if they could get them more interested in these maps and not in the weather cards.

Mr. Smith: It is true that the weather maps are of much more benefit to one who can get them in season and who does understand reading them than the cards, and we are urging the study of the maps and the study of metereology in the schools just as widely and just as far as possible. We are urging and assisting as far as possible in extending this knowledge and encouraging an interest in its study, but the forecast cards we can make out several hours earlier than the map, and we can catch mails with the cards that we cannot expect to catch with the map, and we can send them from these sub-distributing points where the map could not be sent. We telegraph the information to the sub-distributing points and in this way we are able to get the information out to the farmer much more quickly than we could if we furnished it by means of the map. So while the map is an excellent thing, the forecast card supplements it and does its work.

Mr. Cory: These cards issued from this office today at 9 o'clock will not reach southern Ohio until this evening at 5 or 6 o'clock. We have gardeners down there who raise celery and a great variety of vegetables who would be very anxious to learn as early as possible whether there is going to be a cold snap or whether the temperature will fall twenty-five or thirty degrees. If they do not get the information until dark it will be too late to do anything that night. If they had the information a few hours before it would have been of great value to them, but as it was it came too late. That is one of the faults with the cards. If they study the weather map they can know twenty-four to thirty-six hours beforehand about what they can expect; but of course they cannot tell just exactly the extent of it.

Mr. Smith: I would state in addition to what I have already stated, that if there are any market gardening sections or other sections where these forecasts are especially desired and where it is possible to furnish them, and arrangements will be made for displaying flags, the bureau will telegraph the information and furnish the flags for display; then you can get the information before 10 o'clock in the morning.

On motion a recess was then taken until 7:30 P. M. of same day.

EVENING SESSION.

Tuseday, January 10, 1899.

After calling the convention to order, President Begg said:

We are interested in our national possessions. We have all heard of Alaska and know more or less about it by reading with reference to it. We have a man with us tonight who has spent sixteen months in Alaska and he will give us an address upon his experiences in that far off country.

I now have the pleasure of introducing to you Mr. J. L Roudebush of Stonelick, O.

SIXTEEN MONTHS IN ALASKA.

By J. L. Roudebush, Stonelick, O.

Mr. President, Ladies and Gentlemen: — I stand before you tonight as the sole survivor of the Lowry expedition which sailed from the city of San Francisco on the 19th day of April, 1883, in the good ship Alaska, with nineteen souls on board, which was wrecked near the Arctic mouth of Behring strait on the 8th day of October, 1884.

Until the late war it was the proud boast of the American people that not one square mile of our vast territory had been added by the power of the sword. This was true in one sense of the word — not in another. We have the Louisiana Purchase in 1803; Florida in 1819; the annexation of Texas in 1845; the cession of California, Nevada, Arizona, New Mexico, Utah, Colorado and portions of Kansas and Wyoming in 1848; the Gadsden Purchase in 1853; Alaska in 1867, and the far-off islands of the Pacific and those near us in the Atlantic in 1898.

We often hear the expression, "The Old and the New World." We forget that America is the older of the two continents. In that old, azoic world of flame the first portions of the earth's crust to become solidified were two spots in North America, one near Mt. Wrangel in Alaska, and the other in Labrador From these two spots as nuclei were built up the large land areas of the Western Continent. I might say in this connection that the mineral regions of Alaska and British America are the result of two forces, the eruptive and erosive. What the eruptive force failed to do the erosive completed when ice was "King" from the equator to the poles, for the "gold belt" of the Yukon Valley is one vast terminal moraine.

The climate of Alaska is both continental and oceanic. That portion bordering on the Pacific Ocean and Behring Sea being influenced by that greatest of all the oceanic currents, the Japanese, while in the interior and particularly in the valley of the Yukon it is continental. In short, along the coast the difference between the minimum and maximum temperature is not so great as in the interior where the thermometer often records in those long summer days eighty-eight degrees above and in the short winter ones seventy degrees below zero. It might not be out of place to say, that the lowest point the thermometer reached in the winter of 1883-'84 at Fort Yukon was sixty-five degrees below zero. The rainfall in Alaska is greater than in any other of "Uncle Sam's" vast possessions at the present time, aggregating in rain and snowfall about one hundred inches in the valley of the Yukon, decreasing as you go north and east towards the British possessions. This makes it possible for the Yukon to discharge a larger volume of water than the Mississippi. In fact it has an average width for the first two hundred miles of its length of over ten miles.

The wealth of Alaska consists in its mines, fisheries, furs and timber. I believe there is more gold, more copper, more iron and more petroleum in Alaska than in any other like territory on the globe, but it will cost hardships incredible and capital unlimited to get them. The Yukon River contains more salmon than ever the Columbia did, and Behring sea more cod fish than the body of water surrounding the banks of Newfoundland, and of a better quality too, and there is certainly room for improvement along that line. The fur bearing animals of Alaska are those common to all of the Arctic regions, with the exception of the sea bear. This is the seal of commerce. Today a seal skin in the United States is an article of contraband. My greatest objection to the present statute regulating the seal catch, Mr. President, is that only old bachelors are allowed to be caught.

Southwestern Alaska abounds with wonderful forests of unlimited areas of cedars and firs which in the future will be of untold value. The forests of Alaska are practically impenetrable on account of the fallen timber, lying from ten to twenty feet deep, the accumulation of centuries, hence bacteria, as we were told today, are needed. Over these fallen, frozen trunks is the ever present moss from two inches in thickness in the south to two feet in the north about Point Barrow. As you go north the forests decrease in area and size of timber, the reverse being true of the moss. The inhabitants of Alaska are not, as is generally supposed, Eskimos, but belong to the same family as the Digger of central and southern California and the Mohaves of southwestern Nevada — the lowest type of the noble red man. It is true that there is a merging into the Eskimo type north and east of the Yukon. Now then, it is possible we have said in general all that is necessary along these lines and I must beg your pardon for becoming more personal and giving you my own experience.

There is nothing strange, passing strange, in the luring away from home of the farmer boy to go wandering down into Old Mexico, for men have hunted, bled and died for gold, so when I found myself in the city of San Francisco late in the winter of 1883 it did not take much persuasion to get me to join the Lowry expedition, uniting my future with theirs in a prospecting trip to the "Land of the Midnight Sun." Some people have an idea that the midnight sun belongs only to the Swede and Norwegian, but I want to say to you that over a portion of this wonderful land wave the protecting folds of Old Glory. I am not in sympathy with those Americans who cross the broad Atlantic to see what we have at home. We provisioned our vessel for three years and had on board a steam launch in sections. When we sailed on that bright April morning we had two objective points in view. Five years before a miner had returned from that far off country with specimens of ore from two widely separated districts, one of which afterward proved to be the now famous Tredwell gold mine; the other was from the Kowok. By the aid of maps made by the miner we had no difficulty in locating the first, but to our sorrow it was already possessed. I want to pay that miner a compliment, in that he told us the truth when he could have obtained similar specimens in many different places. I followed the business of mining until I could hardly trust myself when "talking up a sale." Yet there is nothing peculiar about that. You farmers when you sell your pears "line them up," putting the best on the top with the "knots" in the center. When you want to sell the kicking cow to your neighbor "she is perfectly gentle and the women folks don't see how they can get along without her." So I want to emphasize the compliment, not that truth does not always pay, but that in his immagination there was millions in it. I will say to you, gentlemen, that after we found this location being worked we were not disposed to take possession by physical force, though that was the only law then acknowledged by many, for Alaska was not then an organized territory. She had no government. Had we been otherwise disposed we would have been met with Winchesters, and I say to you that one of the strongest arguments in the world for right or wrong is a Winchester when you look down the barrel and know that it contains a charge of powder and ball, with sixteen more in the magazine. Like the Arabs of old we folded our tents and stole away.

I am now talking of conditions fifteen years ago and so want to be understood. I am going to leave out a great many things, because I do not want to be considered by you, brother farmers, as a revised edition of Ananias. It was not a difficult matter to persuade the other two owners to stop at St. Michaels. Here we left our vessel in charge of two men and putting our steam launch together we started for the mouth of the Yukon, distant one hundred and seventy-five miles. It must be remembered that the Yukon is a delta river with at least seven mouths and that Behring Sea is very shallow near the delta, so shallow that a vessel drawing over six and one-half feet cannot cross the bars at its many mouths. The upper Yukon was now one of our new objective points. Reports had come to us that gold was plentiful on the divide between the Stickeen and Pelly. We ascended the Yukon to Fort Yukon, where we arrived on the 8th of June. Leaving our steam launch we divided into two parties, one going south into the Tananna hills, myself with eight men skirting the upper Yukon. We hired two Indian dog drivers with two sleds and forty-two dogs. The Indians in this part of Alaska are dog drivers, that is, they transport everything on sleds drawn by dogs. On these two sleds we had eight hundred pounds of baggage, including provisions (though we caught a great many fish, and you have no idea of fish until you go to Alaska, so far as numbers are concerned), a rubber boat and wearing apparel, such as sleeping bags, etc. These Indian dog drivers did not have any fancy harness. Each dog was fastened to the sled by a single thong, the head of the dog passing through a loop at one end of it. When they started each dog had a direction of his own. It was amusing to hear the profanity, yet very disgusting and awful. The first English an Indian learns is "whisk," "tobak" and the use of profane words.

Each man in the party was provided with a prospecting pick, shovel and gold pan. A gold pan is supposed to be made of sheet steel and is twice as large as a tin milk pan. As we traveled up the Yukon we prospected the high and low bars on the surface only for gold, as the indications determined. You do not all know perhaps that black sand always accompanies "float gold," but free gold does not always accompany black sand. We never got less than two to five cents worth to a pan in this prospecting and once I washed out fifty dollars' worth. We had a great many hardships in traveling for various reasons. We would take our field glasses and order our drivers to go to a certain spot. They would shake their heads and refuse. Do you know what the trouble was? It was on account of the mosquitos. There are more mosquitos in Alaska than in any country I have ever been. There are about two thousand six hundred different species and only the female bites, and there are more female mosquitos in Alaska than elsewhere. They came in great swarms like gnats and we were obliged to wear heavy ducking over our faces to protect them.

In my opinion there is no gold in the bed of the Yukon. It is a cañon river in many places, with high gravel bars that can never be worked successfully. It is on the small streams cutting the Yukon at right angles, where these lateral streams have cut through the high gravel bars, that you will find the gold. In these laterals the bars are from ten to twenty-five feet to "bed rock" and these are the places from which the gold is obtained today. But I must hasten along.

The summer of 1883 was a cold one. The thermometer at times registered eighty-eight degrees above zero in those long days, yet the ground was never thawed to a greater depth than ten to twelve inches. The moss of which I have already spoken is a non-conductor of heat and it will have to be removed before the ground can thaw to a greater depth by solar heat. They have the same trouble I am told on the Klondike, where they are compelled to thaw the gravel by artificial means before they can sink a shaft to bed rock. There are other disadvantages. The claims are very small, not like Uncle Sam's, twenty acres in area, but only one hundred by two hundred feet, with alternate ones belonging to the crown arranged like the spots on a checker board. By no known means except primitive ones can a man develop his own without developing the crown's, not saying anything about the royalty of ten per cent. on gross receipts.

We had information that on Forty Mile Creek there was an old miner with a barrel of gold. We found neither gold, cabin or miner, only a "trace" of the former. We ascended the Yukon about one hundred and fifty miles from the mouth of Forty Mile Creek and then started on the return trip to Fort Yukon, where we arrived in October, having for our summer's work about two thousand two hundred dollars in "dust." The other party arrived shortly after and we all went into winter quarters, living in semi-Indian style from October, 1883, to June, 1884.

At Fort Yukon I saw from twelve to sixteen, ordinarily, and sometimes twenty of the natives living in a hut sixteen by sixteen feet. These half Eskimos are purely carnivorous, as purely so as the lion in South Africa and the tiger in the jungles of India. Fish with a little game is their exclusive diet, raw and often frozen at that. We dressed in native made suits of seal and other fur and like Brian O'Lynn, in summer we turned the woolly side out and the skinny side in. In winter we had double suits with the woolly side out and in. With moose skin moccasins, seal leggins, bear skin hoods and caribou sleeping bags we managed to keep warm, aided by a Russian sheet iron stove. In this stove we burned drift wood seasoned with blubber. We used fish oil in place of lard in cooking and sometimes for fuel also. It was a cold and dreary winter but the beauty and grandeur of an arctic winter in sky and cloud, snow and ice, twilight and sunlight, star light and moonlight cannot be described, and by those living in this latitude no conception can be had of nature in the frozen north. I never appreciated the wonderful power and wisdom of the Architect of the universe until I saw an Alaskan winter night. Power has not been given man to describe a display of the Aurora Borealis when all the colors of the prism are brought into play. Sergeant Brainard was right when he said "it could not be photographed," and the eminent Swede was wrong when he said it could. We had a complete outfit, but utterly failed to get a photograph. Fort Yukon is on the Arctic Circle and there I saw the sun rise due north on the 20th of June and due south on the 19th of December. It just peeped above the horizon and then went to sleep. In June, 1884, Mr. Lowry and party descended the Yukon in the steam launch and went to St. Michaels, then went on board the Alaska and sailed for the mouth of the Kowok, the second objective point. We went up the Porcupine one hundred and fifty miles and found richer diggings than on the Yukon. In July we started for Point Barrow, where we arrived after a long and dreary march of over sixty days. On leaving Point Barrow we hugged the coast pretty closely, using our boat when possible. We arrived in sight of the Alaska on the 5th of October, but did not reach camp until the 6th. Cheer after cheer was given when we found we had been successful, as we had sufficient ore on board to justify our return to San Francisco. On October the 7th we had by hard work towed the Alaska one and a half miles, luckily escaping the rocks. We still had four and a half miles of dangerous shoals. On the evening of the 7th we had cast anchor, with the intention of resting on the 8th, which we did. About 8:30 P. M. a strong northwest gale began to blow and in a few moments the anchor began to drag. Then a cry was heard like unto that at Marengo before Desaix arrived, "Save himself who can; all is lost." Each man as he began to realize his situation went back to the religion of his childhood. I saw human nature there as I never saw it elsewhere. That, my friends, with a majority, was a time of prayer. Some were crying, a few swearing. I could neither swim nor row a boat. I shouted to my companions, "Tie me to the door of the binnacle box and cast me overboard. I will put my trust in Him who calmed stormy Galilee." They did as requested and tossed me overboard just as a wave washed the lifeboat out of reach.

At daylight, about 8 A. M. on the 9th, I found myself on the beach, where I had been tossed by the waves, out of reach of the breakers. On my right, within a hundred yards, were four of my companions, cold in death. There was not a piece of the vessel in sight that a man could not carry. There I was, miles from a living soul, without food or fuel — you can imagine the rest. The first day passed away, the second and but little of the third remained when a sail "hove to," a boat was lowered and six sailors rowed five miles and came and took me away. The pangs of hunger were so great that I had resolved at the close of that day to take my life if no help came. My rescuers proved to be from the Blue Diamond, a whaler from New Bedford. The sailors said: "We saw the wreckage and thought it was one of our fleet." The officers said: "We saw your signal."

I want to say to the young men present, that when they are in trouble if they will but hoist the signal of distress some one will help them.

I was taken to Sitka and then transferred to the United States Revenue Cutter, Corwin. I arrived in San Francisco without a dollar and among strangers. I spent a few months there and then started for the old farm home. I was glad to lay down the pick and shovel and take up the hoe and get hold of the plow handles. I have been trying ever since to do my part in an occupation which in my opinion requires more brains, more education, more culture than any other There is less temptation and more of the good that stands for true manhood than in other occupations. And tonight I am more than content to be a plain Ohio farmer.

President Begg then said:

We will now have the pleasure of hearing an address by Dr Chamberlain of Hudson, O.

PEDIGREE, ENVIRONMENT AND PLUCK.

By W. I. Chamberlain, Hudson, O.

Gentlemen: — Speaking as I do chiefly to those who are educators at our farmers' institutes, I make no apology for giving you the results of careful thinking on important problems. Pedigree, environment and pluck — these three are the influences that mould the character and fix the type of plants, animals, men. The first two affect plants and brute animals; all three affect men. Pedigree or heredity comes first in its influence upon character or type of plants, animal and man, and affects all three much alike. The form of the child, the plant, the calf, their physical peculiarities and tendencies are, to a great extent, fixed at their birth. The child did not, could not, choose his race, his parentage, his personal peculiarities and tendencies, nor can he "by taking heed thereto add one cubit to his stature," except by natural growth. All these things are, so to speak, his "Birthday gift," be they good or bad. If the child is born a Caucasian, he is one of the race that shall civilize and dominate the world. If he is born a Mongolian, he will likely be sluggish, opium-eating, crafty. If he is born an Indian, he will not likely ever become truly civilized. If he is a Malayan, or a Negro, the probabilities are that he will be a "hewer of wood and drawer of water, a servant of servants," all his days, that is, inherited characteristics persist.

The same is true in general of plants and fruits and animals. The Concord grape, the Crawford peach, the Baldwin apple, by their persistence of type, are a blessing to the whole fruit-eating world. If the calf is born a Jersey, its mission is best butter; if born a Shorthorn, a Hereford, or an Angus, its fate is best beef. If the lamb is born a Merino, its life work is to clothe the backs of presidents and kings; if a Leicester, its fate is to grace their tables. And so through the whole realm of plants and animals and men. Heredity largely rules.

One of the first clear statements of the great law of heredity, is this, from an old fashioned book: "Visiting the iniquities of the fathers upon the children unto the third and fourth generation of those that hate Me and showing mercy unto thousands of (generations of) them that love Me and keep my commandments." Is this the cruel law of a vindictive Deity, or is it a necessary and most beneficent law of Nature in the physical, mental and moral realm? The law that like produces like, that "sin when it is conceived bringeth forth death," that "whatsoever a man soweth that shall he also reap." Men were inclined to call it a cruel one, until the scientists understood it and named it the law of the "survival of the fittest," i. e., the survival of the individuals that are best adapted to their world-environments.

Robert Ingersoll, when asked how he would have made the world, replied: "I would have made good health contagious, not disease." Bless his dear soul, good health *is* contagious, or better, it is transmissible through inheritance. The best, the fittest, the healthiest, survive for "thousands *of generations*" — for thus I am told the Hebrew Scriptures should be rendered. Consumption, drunkenness, scrofula, insanity, are visited upon three or four generations, perhaps, and then they gradually diminish and finally die out, or cease to survive. But high mental and moral power, and robust physical health, — if the parents obeyed God's laws, physical, mental and moral, i. e., conform to their environments, — are transmitted through and through many generations.

In my home town of Hudson, Ohio, about 1805 or 1810, a brother and sister lived in whose ancestral blood insanity was found. Both married, and had large families. Neither was insane before marriage. About one-half of their children were insane during some time of their life-time, but ill health, celibacy, insanity and suicides followed. Through inter-marriage of the healthier ones with sane families, the more sane ones had children mostly sane. The insane, and those in poor health, seldom married, or if married had few children; and now, in the fourth generation, I know of but one in all the fourth generation from this brother and sister who is ever insane and that one is affected only at long intervals and apparently as a result of temporary ill health brought on by some imprudence. The insanity has practically worked itself out in the third generation, in less than a hundred years. It was simply the unhindered and unaided work of the great, and on the whole, beneficent law of "the survival of the fittest."

Good qualities persist longer. The Bach family in Germany have been noted musicians and musical composers ever since about 1625. The American Encyclopedia says: "Fifty individuals of this name whose lives extend over a period of two and a quarter centuries would deservedly occupy an extended place in an exclusively musical encyclopedia." As strong a case can be made for the Quincys, the Adamses and other Massachusetts families. Let Mr. Ingersoll take notice that health and high talents are contagious, or rather transmissible through many generations, while disease and sin tend to work themselves out of the race in a few generations — "the third and fourth generation," as the Scripture phrases it, on the one hand, against "thousands of generations" on the other hand. Is not this a most beneficent law? Is it not the very basis of all possible improvements through "natural selection" and "survival of the fittest," in the long ages before plants and animals were domesticated, and of more rapid improvement since they were domesticated? Suppose now, this law had been reversed and that by some strange misadjustment the deformed, the diseased and the insane had been the ones to survive?

A few words in regard to environments in general before we take it up in its more logical connection, under the dominance of the human will or "pluck," as we have termed it. Of course, soil and climate stamp their indelible marks upon plants, animals and men. High mental powers, great sagacity, ingenuity, inventiveness, coupled with indomitable will, are seldom found in man except in the temperate climate where the snows and cold of winter enforce the laying up of stores for a time of unproductiveness. Race characteristics, no doubt, depend largely upon climate. Sluggishness belongs to the torrid zone, so too, in regard to plants and animals, the flora and the fauna of any region depend largely upon latitude, or rather climate, or the isothermal lines, or upon certain marked peculiarities of soil or surface conformation. The Jersey cow, the Merino sheep, the trotting and racing breeds of horses belong to the hilly and less fertile regions, while the great beef breeds, the Shorthorns, the Herefords, and the heavy draft horses, the Clydes, and the Percherons, belong to the rich prairies of the west, and similar environments in the old world. These and similar facts are too well known to need more than the merest mention in this presence.

Of the three molding influences which I have mentioned it seems to me that our natural scientists, as a rule, give undue prominence to pedigree or inherited power and tendencies, and to environments, and too little to the individual will or "pluck," and the power of intelligent purpose and control in man, both for himself and for the plants and animals under him. And here I make no apology for using certain facts and illustrations used by myself in a recent address before the State Horticultural Society, though they will be used here in different form and perspective and with a different end in view.

The Jersey cattlemen tell us that the Exile of St. Lambert was the sire of more than sixty daughters, each with the most remarkable butter record of fourteen pounds per week or more; while the Holstein men tell true tales not less remarkable concerning Pauline Paul and the DeKol family. Horsemen will tell you of sires all of whose get trotted inside of 2:20 at three years old, or paced close down to the two minute mark. The Merino sheep men will tell of sires whose get produced twenty pounds of wool per year; and so on through the whole remarkable series that go to show the work of pedigrees. Our horticulturists know that *fixity of type* by means of cuttings, layers, scions, bulbs, buds and tubers, is worth untold millions in horticulture, by rapidly diffusing valuable new types.

And so it is by no means strange that our natural scientists looking at such facts in the lower realms of organic and then of animal life all the way up to man, should give undue prominence to heredity or pedigree — to inborn powers and tendencies — and too little to man's choices, volitions, and intelligent direction of himself and of the plants and animals under him.

Too little I say; for when we rise from plant life through animal life up to human life we come to a new and mighty influence or power in man himself, in molding character, in fixing type and developing qualities and powers in himself and in the whole realm of life beneath him. That influence is the human reason and will. The power of intelligent direction of himself and others. The indomitable power of purpose and performance which I have dominated "pluck." Man has, or rather slowly develops through childhood, the power to stand outside himself and study himself objectively, as well as all things else; to take stock of his and their powers and deliberately, persistently, and pluckily improve his and their good, natural tendencies and powers, and change and reform his and their evil ones and control his and their environments.

It is easy to see what this will power in man has done for plants and animals. His power aids nature that she may vary and improve species, for example, by crossing the true seed of apples, peaches, grapes, berries, potatoes, and the like, and by special care of environment of fixed types thus produced. This power is worth quite as much to mankind, though in a different way, as the power to multiply fixed types, by means of cuttings, layers, scions, buds, bulbs and the like. The former creates new and better types. The latter multiplies them with the most beneficent rapidity. Is it not a most healthful provision of Nature that these two powers should exist — the power to create new and fixed types in the one way, and to multiply and spread the valuable ones indefinitely in the other way?

Live stock men, too, know that the case is almost as strong in regard to animals. Plants, as we have seen, have almost no power of self-determination, but in the hands of the horticulturists they are like "clay in the hands of the potter." So in regard to animals, the case is almost as strong. Their selection, crossing, breeding, feeding, encouraged survival of the fittest, enforced destruction of the unfit and diseased, indeed, almost their entire environment under domestication is under the direction and control of their owners, not themselves. Indeed, even if they now had the chance, as in the former wild state of their ancestors, they have not the individual capacity for intelligent self-direction by will power. No blooded colt ever persistently put himself down to a thorough course of training to develop the 2:20 or the 2:30 trotting gait that was born in him potentially. Man's guiding hand, by intelligent crossing, and the like, and by enforced survival and training of the fittest and destruction of the unfit has caused more real improvement in the breeds of plants and animals under domestication in the last three centuries than in all the long series of the centuries that passed before this intelligent guidance began. It is man's hand, not Nature's; it is man's intelligence of selection, crossing, care and adaptation to environment, not natural selection or crossing or adaptation, that has produced the Delaware out of the Fox grape, the Snow apple from the Wild Crab, the Shorthorn from the Pennyroyal and the Merino sheep from the hairy, horny Rocky Mountain type.

Of course, the flexibility of environment in this free land of ours gives free play to the will power in the child and in the man in his own behalf, as I shall further show presently. But it is will power persistently employed that transforms the rail-splitter — whose near ancestors were "poor white trash" almost — into the greatest, noblest man of the nineteenth century.

We have seen what will power in the man can do and has done for the plants and animals under him. Now let us see what the individual will power or pluck in man does for the man himself. And here I quote again in substance from a former address. The two-roomed, clapboarded cabin at Mt. Pleasant, Ohio, now on our State Fair grounds near this place, cost not enough to carry a hundred dollars insurance, but in it was born Ulysses S. Grant, one of earth's six greatest generals. It was his dogged will, which all his life would "fight it out on this line if it takes all summer" — it was this and not heredity, or human pedigree, or environment, that made him one of earth's immortal six. This tremendous will power it was that lifted him above a somewhat unpromising heredity and environment.

Do you say that his will power was inherited? Ah, but that is begging the whole question. This will power where there seems almost no possibility that it could have been inherited, this will power often lifts individuals above the most adverse and unfortunate hereditary tendencies. I know a woman, now past sixty, with ancestors, parents, brothers, sisters, dead of consumption — dead herself forty years ago, but for the grim and dogged will that shut her teeth and through them said: "I will never die of consumption," and that intelligently, but not anxiously, took all sensible, rational means to avoid it. That will was developed, too, and not inherited. I know a man, now past fifty-five, in whose veins flows the blood of three generations of ancestors, many of whom were insane, who simply says: "I will never be insane," and he is now, doubtless, past all real danger. I once heard Dr. Washington Gladden preach a powerful sermon on "The Duty of Sanity." The very title of it hints at the dominance of will power and the possibility of its development.

Professor Thomas Day Seymour, of Yale University, born and reared in Hudson, is the descendant on both sides of an illustrious line of Yale presidents and Greek professors. The first term of his freshman year in the sixties, when he recited Greek to me, he showed neither precocity nor strong will power, and I frankly told him he ought to do better. In the third term of the same year he stood "far and away" above the other members of a most brilliant class, largely because of the deliberate exertion of strongly developed power of will. Today he is easily one of the three first Greek scholars in America. He lately wrote me in reply to my congratulations on some of his recent published works in substance as follows: "If I have done anything worth while in Philology, it has been through the dogged determination to do patient, persistent, faithful work."

I know another Hudson boy, one of the finest Greek scholars that ever graduated from the Western Reserve University. He is the son of an ignorant peat-burning, potato-nourished sire, who, however, had the will power to leave the peat bogs and potato fields of the Emerald Isle and seek a better environment in America. An effeminate and weak French noble once sneeringly asked an illustrious Frenchman of plebian birth: "Who were your ancestors?" "I am myself an ancestor!" was the true and stinging reply. The strong will power of one man makes him say continually: "I will be worthy of my learned ancestors." The strong will power of the other makes him say: "I will rise above my unlearned sires and be myself an ancestor." High and equal honor belongs to each, not what we have received, — one, two or five talents — but how we use it, will be the basis of reward in every just judgment. From among the hewers of wood — the negro race — and the most adverse environment by sheer force of will have risen such illustrious men as Toussaint L'Overture and Booker Washington. All honor to the men who come up from below!

Take another example of one who rose by pluck or will power. Theodore Roosevelt, born both of wealth and worth, was a puny youth of weak will, thin shank, delicate and pale; slow to learn and too weak to stand the rough jostling of the public schools, too spiritless to stand up for himself, but finally there came a change. While yet a boy he became ashamed of his thin legs and his weak ways. Hear what he says: "I was determined to make a man of myself." And so he sought his father's country place or farm, he swam, he rode, he tramped, he boxed, he worked, he studied natural history in the fields and gathered specimens; he developed that incomparable physical and mental vigor of the future hunter, ranchman, rough rider, scientist, writer, scholar, man, whom the world delights and will delight to honor. All honor to the thin-shanked, slow thinking boy, whose sheer will power deliberately developed, by the aid of country life, made him a man.

Considering such facts as the above, we can hardly wonder that our preachers and philosophers should come to make the power of the human will too prominent relatively, and give too little regard to heredity and environment.

As to environment we have only time to enforce what has been partly said already, that wherever the environment is flexible as in this country, the will has vastly freer, fuller scope than where it is rigid, as in the old world. There the strong will like the caged lion may beat and struggle fiercely, but it will be impotently, against the prison walls of its environments.

Said Garfield once, in substance: "In the old world the grades of society are like the strata of the rocks, in which no stratum can rise above the geological level, save by some mighty upheaval of nature. But in this country they are like the waters of the sea in which the drop that today is buried in the depths, tomorrow may ride on the top-most crest." Thank God, ours is a land of opportunity for all, not for the well born alone; that here "every one shall give account of himself," not of his ancestors, to God and his fellows, that in this land worth and work will always win. The cruelest dictum of the old theology was this, "In Adam's fall we sinned all," with the inference that we must all suffer for our sins. The cruelest things in the old-world, monarchic customs is the force that binds men to the level of their ancestors, thrusting down the low-born man of worth and bolstering up the high-born man of worthlessness, weakness and depravity.

We have thus stated truth and principles more or less familiar to you all. What bearing have they upon us? What duties do they enforce? In this presence I need not urge the importance of aiding nature by our intellects and our will power in her efforts to improve our crops and our stock. We already do this and do it well. We pay big money for choice, new, and prolific seeds of cereals and vegetables, and for full-blooded and prepotent sires for our flocks and herds and dairies; and we guard and control the environment of plant and animal with most jealous care. We till our crops with diligence, lest an environment of dry soil or clods, or of rank weeds, should dwarf the best pedigree of the seed. We patiently study out the best feed rations, care, stables, cleanliness of the animals themselves. We know that the manger, the feed rack, and the slop trough must help the sire and dam, or the "get" will never obey the fifth commandment and honor their father and their mother by their own individual performance. On these points I need not enlarge in this presence, but simply ask: Do we do as well by our children in these and similar respects? Do we care as studiously and earnestly that their food rations and their environments, physical, mental and moral, may all be best adapted to their healthiest growth and best development?

In 1880 I said in one of my first farmers' institute lectures: "The finest product of all our farms is their product of boys and girls." This sentiment was much quoted on institute platforms and in the public press for several years, indeed up to the present time. If it is a true statement, is it not worth while to ask whether we are trying as faithfully and as earnestly to improve the human race, as we are to improve the race horse, the butter cow, and the beef and mutton types? Our duty to posterity is to make our children stronger, healthier, wiser, better men and women, than we, their fathers and mothers, were at the corresponding age. Unless we do this, on the average, and especially we of the better educated classes among the farmers do this, the farming world cannot possibly grow better. But it surely should grow better. Each generation stands upon the shoulders of the preceding generation. Surely it should stand higher. It starts with all the accumulated wisdom of all the ages, plus the gain small or great, in opportunities and results made by its immediate ancestors. Did you ever think how infinitely easier it is to use the knowledge and inventions of others than it was to discover and invent and make them? For example, to use daily our tables of square and cube roots, of logarithms, or our tables of simple and compound interest, than it was to work them out originally? To ride on a train than to build a railroad? It took many weary years to bore the Hoosac Tunnel through the mountain. It takes less than ten short minutes to pass through it on the whirling railway train. Scarcely less striking is the difference between the labor required in utilizing the knowledge and inventions of the past, and that originally required in their achievement. And so I repeat it, that each generation should rise higher than the preceding and that unless our children rise higher than ourselves in physical, mental and moral excellence, it is chiefly and seriously our own fault. How shall we help them thus to do?

The three influences that do most to make or mar a character, that work most powerfully with or against any strong and well acting will, are, first, the education; second, the life partner; third, the life calling. What are we doing to help and guide our children in these three respects?

The progress of the past fifty years has done much along educational lines. It has made our education far more practical, beneficent, elevating, world lifting, more related to things close to us, less related to things far remote. When I graduated from college in 1859 my education thus far had made me know far more of the sun, moon, and stars, than of this earth; more of the history, geography, and physical geography of Greece and of the Roman Empire than of the United States or Ohio; more of the problems that confronted those nations than of those that confront us now. We were taught things remote in time and space. We were taught more of language, which at best is a mere vehicle of thought, than of thought itself conveyed by language. This relative misdirection, of course, is like Barnum's story of the pocketbook: When he first started a little "store," a man wanted to get trusted for a pocketbook. Barnum refused on the ground that he had no money to pay for it, he had no money to put in it, hence, was not in perishing need of the pocketbook. So in regard to the excessive and ill proportioned dominance of the study of languages of fifty years ago. As I look back upon it with the forty years perspective, it seems to me that it were better to know something in one language than to know nothing and be able to tell it in ten languages. I would rather go to market with one wagon loaded with the products men most needed to buy than with ten empty wagons. I would rather learn how God made this universe by studying in the fields, and quarries and railway excavations, how he actually did make it, than by ratiocinating within the walls of some monastery to find out how he should have made it. These are old thoughts of mine publicly expressed, more fully, years ago, but in the January Century, 1899, I find this in a splendid article on "The many sided Franklin." He used to joke about "Mr. Fogg who explained English by Greek," and was "so learned that he could name a horse in nine languages; so ignorant that he bought a cow to ride on." In speaking of the linguistic and philosophic learning of Harvard at that time, so little fitted to help men to make a living, except by the three learned professions, he says: "I observe a great many, yea, the most part of those travelling thither, were little better than blockheads," so that after graduation, "many of them from henceforth, from want of patrimony, lived as poor as church mice, being unable to dig, and ashamed to beg, and to live by their wits was impossible."

Happily for us, the education, especially in our land-grant colleges or universities, and our agricultural and technological schools, is far more practical, far more beneficent, far better adapted to fit young men to do the things most needed to be done in this workaday world and to do them much better than their uneducated fellows. Our own work with our children, from their infancy up, should be to help them to strengthen their power, form habits of persistence, of never giving up any task or problem. When your boy sees your bury that bowlder in half a day, that weighs three tons, in order that you may not plow, harrow, mow and reap around it for forty years, impress upon his young mind the fact that the same sort of thing pays in all his studies — will pay in every difficult work in life. Teach him that the word "almost" is the "meanest" word in the whole English language. Teach him to laugh at the boy who "hadn't caught no fish, but almost had a nibble." Here is a ladder with rounds a foot apart: if he lift a foot eleven inches and "almost" reaches the round, he may go on to all eternity and never reach the top. If he "almost" learns the multiplication table he will never get any further along in mathematics, if he "almost" learns the Latin verb he can never get any further until he quite learns it.

The trouble with the Spanish guns in Manila harbor was, that they "almost" hit Dewey's ships. What gave Dewey the marvelous victory was that from boyhood up he had spurned from his vocabulary that word "almost." We should early teach our children, too, the immense vantage ground of habit in the following respect, that persistent habit becomes, so to speak, fossilized, so that the thing done in forming the habit itself comes to be wholly automatic, and wholly liberates the power of intellect and will, for other and more difficult tasks. No reader ever reads intelligently until the recognition of each word and of the thought it contains, becomes purely automatic, and sets the mind wholly free to grasp the writer's complete thought. No pianist ever thrilled an audience until the reading of the score and the fingering of the key-board had become wholly automatic and unconscious, and his soul and body set free to drink in and give forth the inspiration of the great composer. This automatic or fossilized power of will, as I have called it, becomes a kind of latent power, too, ready to be drawn upon in great emergencies.

All this, of course, must be simplified to our children, less and less, however, with their advancing years, the point of course all the time being to strengthen their will-power, their determination, their pluck, so that they shall seize hold of their environment all through school and college, and make it do its utmost in fitting them for life's work and life's emergencies.

It goes almost without saying, amid the educational facilities of the present day that we should choose for them, or help them to choose, the line of education best fitted to their capacities and tastes, and therefore, best adapted to fit them for what is likely to be their life work. The growing tendency of our splendid public educational system, all the way up to and through the university, is to differentiate the talents of the children early — to discover the aptitudes and capacities of each child or youth before he enters the college or university — to show him what kind of drill he needs to fit him best for the particular work nature intended him to do. Oliver Wendell Holmes' queer philosopher, you remember, said all the misadjustments of life occur "because the round men get into the square holes, and the square men get into the round holes." Exactly that is the sort of misadjustments that our modern system of education is increasingly trying to prevent. It is also demonstrating the fact that physical drill does not hinder but rather helps mental development, and that the kinds of drill and of training both physical and mental that fit men for some future work in life, develop the intellect and the soul, as truly as the kinds that in themselves contain little or no practical utility. These and things like these we should, by earnest study, ourselves understand, and help our children to understand and utilize in their education.

The next important influence already named in strengthening or weakening will power, and in molding or marring character for our children, and our children's children is the choice of the life partner. What are we doing to help our children to choose wisely or even intelligently or thoughtfully? Do we give as much anxious thought to the proper mating of our boys and girls as of our dumb beasts? It should take far more anxious thought, for the limitations to the improvement of the human race in this direction are almost infinitely greater than in the brutes that perish. Among these we select the best sires and dams, and the rest go among the steers, the wethers and the geldings to do life's drudgery or grace the butcher's block. Such heroic methods among men are impossible, or repugnant to the moral sense and instincts; indeed, such attempts at artificial selection as have been made among the Mormons and the Mohammedans have proved dismal failures physically, mentally and morally. So, too, in regard to diseases among plants and brute animals; pleuro-pneumonia is stamped out by the enforced destruction of whole herds over large areas under State or National law. Peach yellows is eradicated by rooting up and burning vast areas of infected trees under State law, and with moderate compensation to the individual owner; and so are other diseases and pests in the animal and vegetable world.

Of course, our very proper ideas of the sacredness of human life, forbid any similar treatment to prevent the spread of consumption, scrofula, or even insanity and imbecility in the human race. Senator J. Park Alexander, a few days since, told me that he had been lately in Columbus on a commission to buy a farm with necessary equipments of various kinds to furnish work for the adult imbecile or feeble-minded pupils discharged by limitation from our great imbecile asylum. He said it was found that with the instruction given in this institution the feeble-minded became to some extent capable of self support under proper direction and restraint, but that if discharged, they returned home and in many cases married and a large portion of their children were imbeciles to fill our hospitals again and to become a burden to themselves and to society. We may well question whether the progress in sentiment or in knowledge, within the next century will not forbid, even from the humane standpoint, to say nothing of the saving of the great public burden, the marriage, not only of habitual criminals and feeble-minded, but of those who have strongly inherited insanity, consumption, and other transmissible and incurable diseases.

We thus see that the possible improvement of the human race, through heredity, is at present necessarily far less rapid than the improvement in the race of plants and animals. In the latter, under domestication, we have intelligent enforced celibacy and mating of the best types with the destruction or the enforced celibacy of the unfit and the diseased. But among human beings we still have only the terribly slow means of natural selection, with the survival of those on the whole best fitted to the environment by strength or craft. The only chance of improvement here is through the action of strong and wise will among the children and the youth as they come to maturity. Do we really undertake this task seriously, which all considerations of righteousness and of improving the human race seem to demand? Do we even teach our children that love and marriage are serious matters, with happiness or misery entailed upon the progeny according to the wisdom or the folly of the marriage? Do we even seriously teach them that it would be a great moral as well as a great physical wrong to marry those, or for those to marry, whose blood is tainted through inheritance with consumption, scrofula, or insanity, or by acquired habit with the evils or crimes of the opium or alcohol habit, and that even these acquired habits are transmissible? How well do I remember a young man some thirty-five years ago in one of my classes in the Western Reserve College who drifted into excess and finally into delirium tremens in spite of all the efforts of his instructors and fellow students. He was a son of a common pleas judge in Ohio, a man of good judgment of real legal acumen, but of intemperate habits, and this son and his other son inherited the drink habit. The young man himself said to me one day, "You have no idea of the strength of this inherited habit. I can't remember the day when I was so small that I didn't like whisky; yes, more than that, loved whisky." From the standpoint of heredity there is much to be said in favor of the English notion of not marrying beneath one's blood or station. The principle is correct, though often foolishly applied. If a young man cares not for himself, he should care for his possible posterity and shun the drink habit.

The third great influence which I mentioned that goes to make up environments and strengthen or weaken the will in forming best character, is calling or occupation. I mention it the last of the three, although it is not always last. In fact, the education, the choice of a life partner, and the choice of a life calling may gradually be going on together for several years. We should help our children to wisely choose their calling, the one of all others for which their natural tastes and natural capacities best fit them from the first, and for which their education, if wisely directed shall give them added fitness. I say "choose" their calling, for that is possible in this country to the fullest extent. The son of the ignorant railway section hand may become — nay, often does become — the learned college professor, the brilliant civil engineer, or the wealthy business man. It is not here as in Europe; there as a rule the son must follow the calling of the father, and can seldom rise above it, as we have already noticed.

First, then, as farmers we cannot expect all our sons to be farmers, nor should we desire it. Dr. Josiah Strong, the author of "Our Country," whose sale has reached nearly a quarter of a million copies, in one of his latter books, "The Twentieth Century City," has shown clearly in part why our urban population must inevitably increase far more rapidly than our rural population. In brief, the reason is this: that the per capita consumption of food and clothing and of the materials therefor, is nearly a fixed quantity, while the per capita consumption or use of the finer articles of manufacture, artisanship and art, is well nigh unbounded. For example, men cannot consume ten times as much of flour and vegetables for food or of wool and cotton for clothing, because they happen to be ten times as rich; but they can consume or use far more than ten times as much along the higher grades of architecture, art, decoration, painting, music and the like. Those who produce this last class of articles live and must live in the city. Those who produce the first class of articles, the raw materials for food and raiment live in the country, do the farming. Further still, a point which Dr. Strong fails to notice, even the means, the implements and the machines for doing farm work, are manufactured in the cities, so that three-fourths, perhaps, of those who formerly lived in the country to do the hand farming, now live in the cities to make the machines that do the machine farming. And so this vast influx into the cities from the country, which is so often much deplored, is an inevitable consequence of our advancing civilization. Then, too, some recent statistics from our cities seem to show that some seventy-five to eighty-five per cent. of their most professional and business men are those who originally came from the country. The country therefore should rationally expect and prepare to meet that drain. And why do so many of these successful business and professional men hail from the country? Because the country air and farm employment develop health, vigor, will power, industry, ingenuity, resourcefulness, honesty, faithfulness, adaptability — as I might clearly show. Four sorts of things the city must get from the outside. Pure water, healthy food, fine horses and strong men. The city boy seems to have nothing to develop him, nothing to bring out his ingenuity, and resourcefulness. Water, gas, electricity, steam heat, electric cars, free schools and policemen, all stand at his elbow to do his bidding and even tell him what to do. From his infancy the great city seems to bend over him saying, "You press the button and we will do the rest." He has no chance to drive a nail, saw a board off square, make a kite or sled, a water wheel, wind mill, bird house, dog kennel, or to train or subdue to his own will the wills of young animals. It is a "means of grace" to teach a calf to drink or break a colt! All these and many similar things, to say nothing of the invigorating air, and the necessity for vigorous effort, the country boy has and the city boy has not, and therefore, as a rule, with anything like an even chance, he outstrips the city boy in the race.

Least of all, however, should we assume that our sons on the farm are necessarily to leave the farm; or if they do leave the farm, they must have a thorough education, whereas if they remain on the farm, they do not need one. We and they should thoroughly believe that high success in farming demands a high education of exactly the right sort; that agriculture, as a successful art, is built upon the whole circle of the physical sciences. It used to be naturally inferred that if you educated a boy, he was sure to leave the farm and never return to it: and up to 1860, while fifty per cent. of the college graduates came from the farm, only two per cent. ever returned; so that the chances were as twenty-five to one that the educated farm boy would not return. Said the President of a State University, founded on the land-grant, to me one day as we were returning from a farmers' institute where I had urged the farmers to educate their children: "Ah! Chamberlain, you are hatching ducks; they will swim away from the old hen the first chance they get at the water." And I said I would rather have ducks that knew enough to swim than geese that stay on the farm because they don't know enough to swim away. Since that time there has been quite a change in the sentiment. President Snyder, of the Michigan Agricultural College, lately stated in a public address before the state convention of the Michigan Farmers' Clubs, that some years ago statistics based on personal inquiries, showed that only eleven per cent. of those that came to that college intended to return to the farm, but that similar statistics taken this last fall, show that fifty per cent. intend thus to return.

For nearly all the other worthy callings education has become well nigh universal, because necessary. Of agriculture, therefore, even as of democracy, may it be truly said, "we must educate or we must perish." The whole plane of education has been lifted far higher during the last half century. Agricultural education must therefore be similarly lifted, or farmers will fall behind in the race.

Remember we are trying to help our children to act wisely in regard to these three most mighty factors of their environment, that shall work reciprocally and with reflex action upon and with the will in forming strong and useful characters; these three forces, I say, education, choice of a life partner, choice of a life calling, and that we are now considering the third. Two points we may clearly consider and help our children to consider; first, the calling should be useful, and therefore honorable; second, they should choose one not so densely overcrowded as to bar probable success. The useful callings evidently are those that add to human comfort, happiness, intelligence, and efficiency. Most of the world's workers are working upon matter, and are working in one of three ways; first, transmuting, or changing its structure or nature, chemically or by a vital growth, as when we make glass from sand, steel from ore, and wheat and beef from sunshine, soil and rain. Second, transforming, changing the form, as when we make flour from wheat, coats from wool, or pianos from wood and metal. Third, transporting, or taking some form of matter from where it is not needed to where it is needed, as when our railroads and steamships whirl and float our wheat from the fields of Kansas and Dakota to the homes of France and England. These three processes, or three words that mark the processes, are sometimes called "the three T's of political economy." Each in some way makes matters more fit for human use. Each kind of work is useful, and therefore honorable. Such are the kinds of work for our material well being — while even our æsthetic, mental and moral natures, are largely ministered to by natural things, as in the case of printing, engraving, painting, sculpture, architecture and music, or the instruments that produce it. First of all, we should advise our children to choose some clearly useful calling. One that can stand the test of "the three T's," one that directly, or indirectly transmutes, transforms, or transports matters so as to make it more fit or more ready for human use — for ministering to real human welfare. If our children desire a really useful calling, let them apply this far reaching test. It excludes far more callings or occupations than you would at first suppose. for example, all mere stock and grain gambling on futures with margins; all counterfeiting, and adulteration of foods and medicines and articles of clothing, which enrich those engaged in these callings, by deceit; all keeping of saloons, or of those places "whose gates lead down to death;" all schemes for obtaining values from another by any kind of fraud, or without the voluntary return of a fair equivalent of value. Evidentlly, however, our rule will not exclude any of those callings which minister to the real physical, mental, æsthetic, or moral well being of mankind, including several professions.

Of the useful callings — productive — may we not say in general that those callings most enoble character and benefit the world, in which the trained mind guiding the trained eye and hand, wrestles most strongly and successfully in handling the materials and forces of nature, or in solving the problems of society? As to the rewards of the trained minds, compared with those of muscle, I have sometimes used this incident: The machinery in a great factory that covered acres and furnished work for a hundred of employes had suddenly stopped and no one in the establishment could tell why. An eminent mechanical engineer was summoned from the neighboring city of Boston. He quickly located the difficulty, corrected it and the ponderous engine and complicated machinery moved on as before, and the hundreds of workmen again began their work. His bill was fifty dollars and fifty cents. Said the manager of the great establishment, "We gladly paid the bill, but will you kindly explain why the items? Why fifty-fifty?" "Certainly," said the other. "It is fifty cents for fixing the thing and fifty dollars for knowing how." That is often the ratio between reward of brain and those of muscle. In every thousand men, he who knows better and cán do better whatever the world needs to have known, or to have done, than the nine hundred and ninety-nine, will be a leader over the nine hundred and ninety-nine. He who invents the cotton gin, the power loom, or the spinning jenny, clothes the naked in vast numbers, as if by miracle. He from whose brains springs the twine binder or the roller process of milling, feeds the multitudes as truly as did He who sat and talked by lovely Galilee. Telegraph, telephone, railroad, dynamo, motor, shorten time and space, enlarge human effort and give us now the years of Methusaleh, as measured by results. He from whose brains sprung the Brooklyn bridge, or the first cantilever across Niagara, or who fixed the Shorthorned type, or bred up to Exile of St. Lambert, or originated the Fultz wheat, Concord grape, the Northern Spy apple, or the Carman family of potatoes, is far more worthy of admiration — did far more to benefit the human race — than he who makes fifteen millions by a sharp bargain. The mighty problems of handling the forces of nature and society, or of originating and multiplying the best types in agriculture, are far more noble and enobling than the sharp and doubtful practices of financiers.

The world now asks not, "What do you know of many things remote in time and space?" but "What do you know of things right here, and what can you do of things that need doing now?" Therefore, it seems to me we should educate our children to those kinds of work where the quick brain aided by the trained eye guides the quick hand in work that now needs doing. Did you ever stop to think that for many centuries the world educated the brain of one set of men and the hands and the eyes of another set of men and then wondered that the world's work of invention, discovery and skill moved on so slowly. The present age, I repeat, demands specific mental and physical training — the training of the mind, the eye and the hands for definite and specific work. And because present knowledge is so immensely broad and the requirements of specific work are so imperative, the differentiation in education must begin far earlier or there will be no real success. Second, I said above that we should guide our children towards the callings that are not so overcrowded as to preclude the probability of success. For centuries the universities have been training men for literary work; and with the sure result that most of the literary callings are now greatly overcrowded with applicants. Take a few specific examples. Some four or five years ago the Century Magazine published the fact that during the year just then past it had received more than ten thousand manuscripts, most of them well worthy of publication. Its limits forbade it to use more than two or three hundred. Hence the chances of success there would be about as one to fifty. The literary departments of the Ohio Farmer are overcrowded in a similar way, so that we must reject about ten manuscripts to every one we print, and this in spite of the fact that we pay for the best work in those departments scarcely one-third as much as in the practical departments of agriculture, horticulture, and the live stock industries. The professions of the law and medicine are almost similarly overcrowded. How is it with the commercial callings? The business colleges have been in operation longer than the technological schools, at least in this country, and with this result; that the callings for which they fit pupils, those of commerce, are already greatly overcrowded. Take a single example. Some three years ago a Building and Loan Association in or near the Arcade, Cleveland, Ohio, needed an assistant secretary and expert accountant and advertised the fact, though not widely. Such hosts of competent applicants presented themselves and there was such fierce competition that the place was finaally given to an expert accountant at about forty-five dollars a month instead of a hundred or a hundred and twenty, which such expert training should naturally call for. How is it with the professions and trades of high skill? They are not thus overcrowded for reasons already given. Let me offer a single fact. While I was President of the State College of Iowa we were compelled to advance the final work in electrical engineering from the junior to the senior year for the following reasons: If the engineers could finish their electrical work in the junior year they left before graduation to take places at from seventy-five dollars to one hundred dollars a month. The same in general is still true of really trained experts along the various lines of engineering, agriculture and mechanic arts, so that these seem the best places for our children for two reasons. Some of you have heard Rev. Caspar Hyatt's story of the tipsy man who came home in "the small hours," and his wife said, "My dear, why do you come home at this time of night?" "Because, my (hic) dear, all the uzzer places are (hic) shut up." That is the first reason why our children will do better in newer professional callings where the trained mind and eye guide the trained hand in some useful material work. The older professional callings are so full as to be practically "shut up."

The second reason is because these callings are, as it seems to me, quite as worthy as the purely intellectual ones. When I see the work done by some of our various classes of expert engineers, architects, and artisans, by utilizing nature's forces I am reminded of the oft recurring prayer-meeting phrase, "Taking hold of the arm that moves the world." I cannot forbear giving a striking instance which I used in substance in the Horticultural address to which I have already referred. It illustrates the creative power of the engineer's mind before the muscle of the workman moves.

The largest building roofed on earth was the Manufactures and Mechanic Arts Building at the World's Fair. The Coliseum at Rome seated eighty thousand people but was not roofed. This was four times as large—forty-four acres—most of it covered by a roof resting on single arch spans. Two Brooklyn bridges could be build from the steel of its immense trusses. The central ones were two hundred and twelve and three-fourths feet high and three hundred and fifty-four feet wide. A mile of teams and wagons, each drawing a ton, would be required to draw the steel of a single truss at a single trip. How were these more than Cyclopean trusses swung into the dizzy mid-air and the firm roof laid upon them? The original plan of the special architect of this building was, not to roof the central portion at all. The thought was that it could not be done. The engineer was Mr. Shanklin, who not long before the Fair had been a green country boy in Iowa. But he had a mathematical head and it was trained in the Iowa Agricultural and Mechanical College. One day as the work on this great building was beginning Mr. Burnham, the architect in chief, said, "Mr. Shanklin I want you to roof that central portion." "Sir?" said Mr. Shanklin, "such a roof was never built on earth. Do you know what gigantic trusses it would take and where they must be swung in mid-air? The thing can't be done sir." "The thing must be done, sir. Sleep over it tonight," said Mr. Burnham quietly. And so, all night long the educated brain of Mr. Shanklin, sleeping or waking, wrestled with that mighty problem; and in the morning, with flashing eye and finger tapping on his forehead, he stood before Chief Burnham and exultingly exclaimed: "Sir, I built that roof last night in here."

"In here" was conceived and born all the mighty works that ever blessed mankind. Whether in literature, art, architecture, agriculture, manufactures or transportation. Yes, it is brain work that enobles muscle work everywhere.

And so it is safe to say in general that those callings must enoble character and bless mankind in which the trained mind wrestles most strongly and successfully in subduing the materials and handling the forces of nature and in solving problems of society. And, so, I remark still further, it is folly for us to expect that the boy who remains on the farm and works with uneducated mind can ever cope with those who leave the farm and work with thoroughly educated minds and trained hands and eyes.

So, then we belong to the best of all races. We live in the best of all the centuries and in the freest environment found under any form of government. We are heirs of all the ages. The progress during this wonderful nineteenth century in the beneficent, race elevating sciences, seems to me to be greater than that made in all the centuries that preceded it. He who believes that there can be no similar advancement in the twentieth century, that there is no room for it in "the possibility of things," simply limits the Almighty. For myself I believe that in the next century, as in the one now almost closing the result of such scientific progress will be in a geometric ratio of increase. The question is, shall we as farmers so educate our children that they shall fully share in the rich physical, mental and financial benefits of this world progress?

I have given this rapid review of the three great influences that mold character — to wit: heredity, environment, and the human will. I have given it that we may use them wisely for our crops and flocks and herds, and, most of all, for our children. Let me leave with you this incident, which I have used elsewwhere and which has been somewhat widely borrowed, that it may impress you as it did me at the time and ever since with the importance of muscle compared with the might, educated mind and will; some years since I saw one of those mills of Judea of which our Lord spoke when he said, "Two women shall be grinding at the mill," etc., and what kind of a mill was it? Two little disks as big as a dinner plate and two inches thick, the upper one with a hole in the center through which the corn was poured and another hole near the circumference from which a stiff wooden peg rose. And the two women sitting or kneeling face to face with their four hands grasping this peg, in a few hours work wearily ground out coarse meal for a week's supply for the family. And I said, "That represents mere muscle, before Christian civilization taught man to utilize nature's forces.

A few weeks later I wandered all day long, filled with amazement and delight, through some of the great lumber and flouring mills of Minneapolis, built at the falls of the great "Father of Waters," and at the very focus of the timber and the wheat. A single one of those flouring mills turns out ten thousand barrels of flour in a single day to feed the hungry multitude, a miracle greater than that wrought by our Lord near lovely Galilee and I said further, "These mills represent the trained mind utilizing nature's mighty forces." And then I thought still further that all along this slowly ascending grade of advancing civilization that leads from the little mills of old Judea to the marvelous mills of Minneapolis shall we and our children be found nearer to the one or to the other in exact proportion to the zeal and success with which we have schooled our minds to guide our hands in all the useful work of life.

At the conclusion of Dr. Chamberlain's address, the institute adjourned until Wednesday, January 11, at 10 o'clock A. M.

MORNING SESSION.

Wednesday, January 11, 1899.

The institute was called to order at 10 o'clock A. M. by President Begg, who said:

Ladies and Gentlemen: — The time has arrived to begin the work of the forenoon session. Before we begin our regular work I want to say that the galleries have been obtained for visitors, or members who cannot find seats on the floor of the house and I am informed by those who know that they can hear fully as well, or better, in the gallery than on the floor. I think those who cannot get seats here will find it more convenient to be seated in the gallery than to stand.

I am requested to call the attention of any who are engaged in breeding Polled Durham cattle to meet in this hall, immediately after the noon recess, Mr. Smith, of Reynoldsburg, in regard to the formation of a society.

We all realize the close connection there is between the business of agriculture and the business of school teaching and we are glad to know this morning that we will have an address by one who we believe is well qualified to instruct us upon this important question. I now take great pleasure in introducing to you Professor Thomas F. Hunt, Dean of the College of Agriculture and Domestic Science, Ohio State University, who will now address us.

AGRICULTURE AND THE SCHOOL TEACHER.

By Prof. Thomas F. Hunt, Columbus, O.

Some time ago I visited one of the best township high schools in one of the best townships in one of the best counties in one of the best states in the union. This high school is situated in the geographical center of the township, is three miles from any village and some distance from any other building. There is no village in the township of over five hundred souls. The building for the accommodation of these pupils leaves scarcely anything to be desired. The principal of the school was an ambitious, conscientious, intelligent, energetic man who had at heart the best interest of his pupils as he understood them. The people of the township showed a most commendable pride in the achievements of this school and an earnest desire for its usefulness. I wish there was a school similar to this in the center of every township of every county of this state.

Inasmuch as practically every boy or girl in this school came directly from the farm and as the majority of them will return to it, I was naturally anxious to know what this school was doing to make better farmers and better farmers' wives. I asked if they studied botany in this school. No, the spring term was short and the principal was busy at this time of year superintending the district schools. Then of course they taught chemistry. No, there was not room in the course for chemistry. There were so many other things to be taught. There was room, however, for two years of Latin. Did they teach physics? Yes, they taught physics. Did they have any experimental or laboratory work in connection with the physics? No, they could not afford to purchase the apparatus. They had just purchased a fine piano, which, however, they expected to pay for by subscription.

Here then was a four-year course of study composed chiefly of mathematics, Latin, history, and literature but containing hardly a hint of those vast fields of modern thought and investigation which mean so much to the world at large and to the farmer in particular. I allow no one to exceed me in appreciation of the value of the study of Latin, higher mathematics, history, and literature. I have had occasion to say and I here repeat that I would sooner have a man well educated in Greek than poorly educated in agriculture to run a farm for me.

But for the farmer of tomorrow chemistry will certainly be more important than Latin if a choice between the two must be made; botany more useful than Longfellow's "Courtship of Miles Standish" or Ruskin's "Modern Painters." The study through zoology and entomology of the warfare of animal life in that township is more important to the tillers of the soil both as information and as a stimulus to mental growth than are the wars of Rameses II. or Alexander the Great, however important these latter may be. Some adequate knowledge of bacteriology must be of more service and, if cleanliness is next to godliness, of equal moral value to Webster's oration on Bunker Hill monument or Shakespeare's "Merchant of Venice." The study of the application of science to agriculture and even the discussion of some of the improved methods of farming would be as much in place in a school of this kind as forensics.

All of these things which I have named and which I have found put down as a part of the curriculum of this rural school are excellent subjects to teach, especially for those who expect to become ministers, lawyers, teachers, bookkeepers, clerks, insurance agents, and in many of those vocations where people are popularly known to make a living by their wits. Let me repeat there is no living being that would not be better for having had this instruction. But is it not pitiable that there should be such an utter lack of comprehension of those fundamental truths which are responsible for the progress of the world? What will those young men think who have not been induced by their training or the advice of their teachers to leave the farm? Ten years from now when they have married and settled upon the farm will they think it is a pity? No, if they come to a just realization of the manner in which they have been handicapped in life by a lack of proper training they will not think it a pity, but they will think it a crime. These young girls when they have become mothers will cry out against a system of education which was designed to educate school teachers, which only a few of them can ever be, instead of educating home-makers, which most of them will be.

The laws of our state require very properly a certain educational qualification before a man or woman can become a school teacher, a lawyer, a doctor, or a druggist, and our schools have been, perhaps unconsciously, supplying the demands of this professional class at the expense of the great industrial classes which form the bulk and bulwark of our people. Nearly every college faculty and almost every man and woman connected with either portion of our educational system from the district school up is bending his or her efforts to shape, perhaps unconsciously again, the secondary and primary schools so as to feed the colleges. Frequently this is being done under the plea of giving culture. It is not culture, necessarily, but business, and it is a business in which the great mass of the people get the little end. That these professional classes should be educated, and well educated, no one can or wishes to deny, but it should not be done at the detriment of the bulk of our population.

But to return to our township high school. Why were Latin, higher mathematics, history, and literature well taught while chemistry, physics, botany, zoology, and entomology received little or no treatment? Because the principal of this school had been classically trained. He had a good training in the one class of subjects, practically none in the other. He knew practically nothing of the sciences, of their relations to the occupations of his patrons. When I tried to talk to him of the relations of the sciences to the farmers of his township that vacant stare came in his eyes that would have come into mine had he tried to converse with me in Greek. It was Greek to him. He had no conception of it. I observed the students of this rural school. The dress of the young men especially was almost loud in its dudishness. Their ability to declaim and to sing was emphasized and their manners had been carefully coached. In other words, they had been trained so that they would have the appearance of the city bred boy and girl and could appear to advantage in what, in the cities, is known as society. These are very desirable attributes in every boy and girl and should be encouraged. But what a dreadfully thin veneer it is to stand the hard wear of every-day life, especially when put upon improperly seasoned lumber, and what a waste of good timber.

The contention of this paper is not so much that the curriculum of the schools should be changed as it is that the teachers who teach these schools should have some conception of the relation which the subjects which they teach bear to the occupations that their pupils will follow. The question I was constantly asked when I was a student in the high school and I suppose every other young man is asked the same question, was, what was I going to do when I got through school? When I said I was going to be a farmer, my high school teacher said it was such a pity and my friends took turns in trying to persuade me to desist from my intentions. There was one man, however, who, while not advising me as to the occupation in life I should pursue, saw clearly that if I was determined to be a farmer I needed all the training the state system of education could afford. My father, therefore, suggested that I take a course in agriculture in the state university. When my teachers learned that I was going to college to study agriculture they smiled in a patronizing sort of a way and my school friends looked upon it as a mild sort of lunacy. When I arrived at the university I found a corps of most inspiring instructors but no great amount of company among the students who were studying agriculture in this great institution. Nor is it surprising that I found so few. No person teaching in the lower schools had ever had any instruction relating to agriculture. Few of them had ever known any one who had studied agriculture in a university, and most of them had never heard that it was possible to teach agriculture in a university. As the Hon. James Wilson, Secretary of Agriculture, said recently: "Neither the family minister, lawyer, nor doctor, nor any other educated man to whom young men look for guidance, had ever studied agriculture." Is it remarkable that pupils who generally place implicit confidence in their teachers should be guided away from the farm under such conditions?

But if you will allow further personal allusion, why was I not deterred from the path I had chosen? Why did the importunities of my friends avail nothing? Was it pure obstinacy? I think not. When a boy as I worked with my father gathering the stones from the fields he gradually unfolded to me the manner in which these rocks had been formed. He pointed out the curious fossils contained therein. He traced the significance of these fossiliferous rocks to the changes in matter. As we hoed morning glories from the corn field he explained to me that the soil was nothing but the stones made fine and mixed with decaying vegetable matter. I can take you almost to the very spot on the old homestead where we were at work when this idea first fairly took hold of me. My brain seemed to expand with the thought. While we gathered and burned brush in the orchards my father would point out the various forms of insect life and explain to me the metamorphoses through which insects went and the warfare one upon another. As we planted forest trees upon the waste places of the farm to be cut by succeeding generations he explained to me the duties of man to the soil which he tilled; his stewardship therein, and the dependence of posterity upon the proper treatment of the soil.

Thus the son gradually came to see the relation of knowledge to agriculture and to comprehend some of those larger problems connected with man's habitation of this globe. If a man who never went to school a day after he was nine years of age can bring a lad between the ages of ten and fourteen while performing the most irksome work of the farm to some conception of the world about him, surely a school teacher can do the same thing in the school room while teaching the student reading, writing, arithmetic, geography, and United States history, provided only he or she has some conception of these fundamental truths. While teaching geography the student may be taught the capital of every state in the union without knowing the meaning of either the word state or capital. Or the student may be taught something, first, of the character of his father's farm, next, the township, then his county, and so on in an ever widening circle. While studying United States history he may be taught that much of the prosperity of the world since the discovery of America is due to the addition of important food plants and to the use of iron and coal in the performance of the world's work, which is the truth, or he may be told the stories of John Smith and Pocahontas or similar interesting but questionable stories. While reading in the fourth or fifth reader the pupil may read, for example:

"Fair Freedom! let thy ensign wave,
Till stern Oppression finds a grave;
And let thy Eagle proudly soar,
Till Tyrant power is felt no more."

Or he might read this which has been prepared for a fourth reader for the rural schools:

"Chemists have found that all substances in the universe can be divided into simple elements. There are between sixty and seventy of these elements. Plants need only ten of them. Of the ten elements necessary to plant growth three are much the most abundant. These are carbon, hydrogen, and oxygen. The carbon comes from the air. It enters the plant as a gas through the leaves. The carbon unites with the hydrogen and oxygen to make the starch and sugar and woody matter of plants. Starch, sugar, and woody fiber of plants form about nine out of every ten pounds of the dried plant. The hydrogen and oxygen which united with the carbon to make these substances comes from the water which the plant absorbs through its roots. With the exception of water only a small portion of the plant comes from the soil. If this were not true, around every tree that grows there would be a hole."

Even arithmetic may teach agriculture or money changing. Should I state to you the following problem: If five hundred dollars is let at six per cent. interest, how many dollars would have to be let at five per cent. interest to bring the same amount of money, you would answer six hundred dollars before I could finish the question. But suppose I ask: If an acre of corn produces twelve tons of ensilage, two-thirds of which is water, how many tons of corn fodder will the acre produce, provided the corn fodder is one-third water? Is that problem equally easy? The principles involved are precisely the same, the figures are equally easy and the results are much more important to the farmer who generally has an abundance of corn fodder but in common with most of humanity not over abundance of money. Why is this problem more difficult? Because you are accustomed to making the application of the principle in one case and not in the other. You were taught to do so when you attended the district school. The writers of arithmetic and the teachers of arithmetic understood that these principles had value in their application to borrowing and lending money but they did not see that they had any special application to farming. As a teacher of agriculture in a university I am acompelled to teach students the applications of arithmetic to agriculture and dairy operations although the principles of arithmetic which are used may be perfectly familiar to them.

A worker in science whose name every one of my hearers would recognize should I mention it, said to me very recently: "The utter lack of information among what are called educated people of those larger but fundamental ideas which mean so much to mankind and relate so directly to the farmer's calling, is simply pitiable. The utterly foolish questions that are asked by these same people makes one sad when he thinks of it."

The importance of proper training to those who are going to engage in farming and other industrial occupations is tremendous. According to the census of 1890 about thirty-two million people were engaged in gainful occupations in the United States. Of this number less than one million or less than five per cent. were engaged in professions, while over eight millions or over forty per cent. were engaged on farms or gardens. There were in Ohio two hundred and eighty thousand farmers and gardeners. (This does not include farm laborers.) At the same time there were about five thousand clergymen, five thousand lawyers, seven thousand physicians, and twenty-five thousand teachers, three-fifths of whom are women and most of whom will become homemakers sooner or later. The average expectancy of a man who has reached the age of twenty-one is forty-one and one-half years. It follows from this that at least six thousand seven hundred and fifty persons will engage in farming during the year 1899 who never before engaged in farming as a gainful occupation. On the same basis there will be one hundred and twenty-five pulpits filled with new blood, one hundred and twenty-five initiates at the bar, and about one hundred and seventy-five new practitioners of medicine. About two hundred and fifty men and three hundred and seventy-five women will teach their first school. The question at this moment is not whether the six thousand seven hundred and fifty men shall be as well educated, although I believe they should be, as the few teachers, lawyers, doctors, and ministers, but whether the instruction which they do receive should be a direct preparation for the profession or whether there should be in their training some recognition of the life they are to follow.

No criticism is here intended of the school teacher. Grand results have been achieved by the school teacher in the past. Excellent results are being obtained in the present. During the year just past we have had a striking demonstration of the importance and effectiveness of our common school education. But the best possible results are not being obtained. Knowledge concerning the industries of life has been increasing by leaps and bounds. This knowledge has not reached the school room; at least not to an extent adequate to the situation.

Neither does the fault lie so much in our system of education as in our ideals. Our education has been that which was designed to make orators and writers; to make men whose influence was to be exerted through the written or spoken word. It was not designed to make Grants, Edisons, or Pasteurs, who have exerted their influence largely through action.

One of the bars to further advancement lies in the difficulty which besets the teacher, not the least of which is the inadequate compensation of rural school teachers. The Report of the Committee of Twelve on Rural Schools states that:

"In cities of the United States containing over eight thousand inhabitants there is expended over twenty dollars for each pupil in attendance, while in all other schools less than ten dollars per pupil is expended. It is evident that the first condition of good rural schools is a sufficiency of funds with which to provide them."

Is this indeed a result of the character of our education which so poorly educates pupils for many of the vocations of life that the occupation of teaching is crowded with persons willing to accept inadequate compensation? There is certainly something wrong in a system of education that makes high school and even college graduates seek positions as teachers in our schools at one-half to one-third the compensation received by a skilled artisan.

How can the evils which every thoughtful man admits exist be remedied? Two ways may be suggested. The first is the establishment of normal schools in which teachers shall be trained with some regard to the pupils they are to teach. The most important document on the subject of rural schools that has been published in this country is the Report of the Committee of Twelve on Rural Schools made to the National Educational Association in 1897. I am glad to take this opportunity of stating to all who may be interested that this valuable document may be obtained from Professor Henry Sabin, Des Moines, Iowa, for twenty-five cents. I regret that neither my theme nor my time will permit me to make extended quotations from this report. On the subject of normal schools I make the following quotation:

"The courses of study in the normal school of all grades should recognize more fully than they do the environment and probable future life of the children in the schools, or rather, they should recognize the lines along which lives of most probable future happiness would lie. As has been shown, much the largest class of workers of this country is engaged in agriculture. The environments of their children are rural. The rural school should aim especially to make country life more attractive and beautiful, and should pay more attention to rural industries. Every normal school should have as a means of instruction a school garden, planned and conducted not merely to teach the pure science of botany, but also the simple principles of the applied science of agriculture and gardening; and every rural school should also have its garden, through which the training of the normal school may reach the home.

"Other countries lead us. The school garden is common in the countries of Europe most advanced in popular education. The school garden and the nursery of fruit trees are a feature of the normal schools of France; there is a course of agriculture in the normal schools for men, of horticulture in the normal schools for women.

"The course in agriculture treats of preparation of the soil, special culture of trees and shrubs, of fruit trees, grafting, and vegetable gardens.

"The course of horticulture in the normal schools for women treats of the garden in its general arrangements — the fruit garden, the vegetable garden, the flower garden.

"Each garden has a space reserved as a botanic garden for instruction in the science of botany.

"The instruction received in the normal school is applied in the school garden of the rural school.

"M. Boutan, an inspector general of public instruction, says in a report: 'We can cite several departments in which, thanks to the initiative of the teachers, the wealth of the country has increased from year to year, and from which the exportation of fine fruit has become the source of considerable profit.'

"There can be no doubt that great improvements in agriculture might result from the general diffusion of such instruction through school gardens, under the direction of qualified teachers. Is there any other means for such improvement in sight of this generation? And a still higher good for the country life might come from thus blending its utilities and its beauties in the thought of the child."

There is another method of bringing about improvement in teaching in our rural schools, one more suited perhaps to the genius of the American people. A system of normal school education to be at all adequate to the situation must necessarily be expensive, which would be objectionable in the minds of many although we seem perfectly willing to spend millions under the pretense of educating the Filipinos. The method I refer to is to exact a proper and sufficient educational qualification. Our method of improving the teaching force of our schools, especially in the city schools, has been by adding additional qualifications as a standard for admission to teaching. Every teacher in the rural schools should have some knowledge of those sciences which may conveniently be classed under the general term of nature studies and every teacher in those schools should know something of the application of science and of human knowledge in general to the callings which their pupils must inevitably engage in. Fortunately the same principles which apply to agriculture apply with quite equal force to home life. This may seem strange to those who have not given this subject special study, but it is nevertheless the fact. Their application is somewhat different but it is only the fundamental principles in the main that we can expect to inculcate in the lower schools.

The education for which I plead is an education of both sexes along lines designed to prepare the great mass of our population for the best possible life in the occupations which they will follow. I do not plead for any special addition to the curriculum. It is not necessary that there should be any multiplication of studies or that extra expense be incurred for text books. It *is necessary* that the teacher should have some adequate conception of the purposes of education. It is a great mistake to suppose that a person is fully competent to teach a school when he or she has a knowledge, however good, of merely the subjects in the curriculum.

The principles underlying agriculture lie along the sciences including chemistry, physics, and the biological sciences, sometimes spoken of as nature studies. I would suggest, therefore, that a step in the right direction might be made by requiring every teacher in the rural schools to pass an examination in what, for want of a better term, may be called the principles of agriculture. In order to inculcate good government we have our teachers examined in the science of government. To inculcate good agriculture and good home life I would have them examined in the principles of agriculture. The science of government is not to my mind a particularly happy phrase and perhaps the principles of agriculture is not a happy one, possibly the principles of life would be better. However, neither the phrase to be adopted nor even the method to be employed is the most important thing. The most important point to recognize is the crying need for some improvement of our district rural schools.

I am supposed to have and do have before me the leaders of agricultural thought in this state. I appeal to you to take this matter in hand and exert your influence to bring about a better state of affairs. If you will do so it can be done. In the language of the Committee on Rural Schools I reassert that "if people generally knew how much better schools they might have than those which they do now have and for no more cost it is impossible to believe that they would not bestir themselves to effect reform."

At the conclusion of Professor Hunt's address President Begg said: We will now devote a few minutes to the discussion of this instructive paper. Please be prompt and speak directly to the subject in hand and be as brief as consistent.

Mr. Rankin, Fayette County: I would like to ask Professor Hunt if he thinks the trend toward education in specialties is conducive to the best interests of the country generally?

Professor Hunt: I do not think so. But I have not been agitating education in specialties. That is a point I would like to have fully understood, that I am advocating education in fundamental principles upon which the progress of this world stands, and the education that we have been giving to our pupils is the education in professions. We want them educated along the lines of thought much broader than they have ever been educating. We had an idea, as was stated yesterday, that it is necessary to teach "ritin', readin' and rithmetic" and that was all that was necessary. Now, ladies and gentlemen, as a matter of fact we are teaching reading, writing and arithmetic to our children by accident. There is no pedagogic or psycologic basis for teaching a child between the years of five and ten reading, writing and arithmetic. They are about the only subjects in the whole range of human knowledge that ought not to be taught at that time. Those things we might well leave until the child is ten years old. But I am not advocating any such sweeping change. I am just pleading for a little bit of the fundamental principles of human knowledge, and it seems to me that most people do not get any comprehension of the fact that there is anything to be known in the world but reading, writing and arithmetic. As a matter of fact when we started to educate our children they got most of their education at home. The man who taught the reading, writing and arithmetic was the school master, but the parents educated their children at home in most of the fundamental principles of human knowledge that they knew anything about. Nowadays we expect the pupils to be put into the schools and we want them taught something more than reading, writing and arithmetic (applause).

Professor Wm. R. Lazenby of the Ohio State University: It seems to me that there is a great deal of confusion which arises whenever we discuss this matter of elementary education from a lack of precise terms. The difficulty was expressed by my colleague, Professor Hunt, when he says that to speak about teaching agriculture in the schools is a mistake; that is if agriculture is the great art and the great science we believe it to be, then why should we teach that to immature minds? I know when I entered college I was perhaps equipped as well as the average young man, but I tell you it was all I could do to grasp the principles of the science of chemistry, the real science of chemistry, and its application to agriculture; it was difficult. Now are we not making a mistake? To illustrate a little further, there is to be in this city in a short time a convention of physicians, the American Medical Society. The best physicians of the nation will meet here. Would they not smile if any one should get up in that convention and say, let us teach medicine in our common schools? And yet is medicine as dependent upon science as agriculture? Why no. But what is it we want to teach in our common schools? We want to teach what Professor Hunt meant when he spoke of the principles of life, "nature study" we are calling it now; that is, we want to teach the facts with reference to the things around about us which children can understand. What did our friends Mr. Bradfute and Mr. Cushman say yesterday? Mr. Bradfute said that when his attention was called to the fact that some of our climbing vines moved from the right to the left and others from the left to the right it opened his eyes; he had a wider horizon; it taught him how to observe. There was one important fact to him at least. We have thousands and tens of thousands of just such facts as those which we want to present to the youthful mind to teach them to be observant. I do not think it is agriculture exactly. Of course it is more in relation to agriculture than anything else, but those are the things we want to present. Now let us try if possible and have a logical perspective, you might say, of this subject. An illustration I have sometimes used is this. Here is a wheel. The hub of the wheel is the principal part of the structure. That hub must consist of certain things, or what we would call the rudiments of common English education. We must have reading, writing and arithmetic whether we get it at home or at school. We must have a great many of these facts in this hub. I do not believe we can have science there, for they are the spokes of the wheels. I do not believe you can have the arts there, for they would form the felloe of the wheel and would come later on. We all understand the importance of a knowledge of English. That is the instrument by which we express our thoughts. If we are going to impress the minds of others we have to be able to express our own thoughts. If we are going to receive impressions from others we have to understand the thoughts of others; in other words we have to have a knowledge of English. Does our knowledge of English come from a study of grammar, the science of the language? How many children know anything about grammar as a science? What is it we want to know about English, and which the parents, as Professor Hunt says, at home teach their children? Why there are only four things really that we need to know; one and the first is how to pronounce words, and the more careful the parent is to teach his children how to pronounce correctly the better English the child will be able to use; the second is to know how to spell words; the third is to know what the words mean that you are using, and the fourth is how to put those words together so as to form a sentence and to express your thoughts. If you know those four things and know them well, you know all that any man needs to know really about language as a means for the conveyance of thought, and yet you may not know a single word about grammar. Now I am not decrying grammar, but I am simply saying there is a great deal of time spent in studying the science of language as it is called when we are not learning the proper facts about the language. We must not talk about teaching science when we are simply teaching facts. An isolated fact is no more science than an isolated word is a sentence, or a pile of loose bricks a building, and yet they form the building. I think we first want these facts; facts with relation to insect life and plant life and bird life and everything that surrounds them and then when we get those facts it is time enough to begin teaching the sciences and after that we can study to advantage these great arts.

Dr. W. A. Eudaly, of Cincinnati: I am a great advocate of thoroughness and the learning of practical things in life. I think that is what we want. For that reason I admire very much the paper; but, gentlemen, let me say to you in my little experience I have found my great lack in the fact that I cannot write a good, legible hand; I cannot spell the words that I ought to know how to spell well and I have never been a good reader, and I would give all I have in this world if I knew how to do those three things well. That is all there is about it, and I believe that they are at the very bottom of things — reading and writing and spelling. Gentlemen, let a boy know how to read and write and spell and he has the means by which to accomplish the rest. There is not any doubt about it in the world. Show me a boy that cannot read and write and spell well and I will show you a boy that is not going to learn a great deal in this world about agriculture or anything else. Unfortunately a good many of us did not have fathers who knew all about the rocks and insects and vines growing to the left and to the right, and all that sort of thing to teach their children, and we had to know how to read and write and spell, and all the fundamental principles of a good English education in order to find these things out for ourselves. You must learn how to read, write and spell as a fundamental basis for higher education Take the advice of one who feels the lack of thorough training in this regard, and as you go along the line of the practical things in life remember that a thorough knowledge of reading, writing and spelling is absolutely essential to all other education. Learn the practical things in life, but do not do as I did, learn all about natural philosophy, as we called it then — they now call it physics — before I could pronounce the words.

Hon. L. D. Bonebrake, State School Commissioner: I feel as though I ought to say a few words to you on this matter, since the general subject has to do with education. The question of what our rural schools shall teach is perhaps one that is perennial in its nature. We may expect every year to have the same old problem up. What shall we teach in our country schools? The same problem obtains in the city schools, and if I mistake not, as I have tried to understand the school curricula as they are prescribed in the high schools and colleges the same trouble exists there. I have had frequent occasion to examine courses of instruction in the various schools of the United States and in examinging them and comparing them year by year I am struck with the wonderful changes being made all the time in the school curricula. The child does not change much, but the school course does change. Now I will turn aside from that which may be considered a constant problem to say a few words on another subject which comes strictly within the limits of the topic now being discussed. It seems to me, ladies and gentlemen, that one great question for us to debate now is the practical question of, how can we get the best schools possible for the boys and the girls in the rural community. Fifty per cent. of all the children today in the State of Ohio are not supervised, their work is not inspected; it is not well directed; they work out month after month practically one course of instruction. Many of you farmers are paying money in order that your children may go to school in some of the villages or cities. In the city of Mt. Vernon, where I have lived for nine years, we have been collecting of late approximately fifteen hundred dollars a year from outside tuitions. This is a tribute which the farmers around about our little city pay to our city people in order that they may have our school privileges. The same thing obtains in a great many communities of Ohio, practically in all of the communities. And I think I say that which will not be controverted when I say that after all the ideal opportunity for a good school is in the rural community. I think I am right, that with the nature studies that Professor Hunt referred to, with the healthful and invigorating influences of the country, with the boy trained in industry, with the boy fed upon good food and living in pure air and drinking pure water, with his imagination not fed upon the miserable, gaudy paintings and pictures which are placed upon our city bill boards; with the boy all the time surrounded by healthful circumstances, we have the opportunity of making the ideal school. Approximately only about eight or ten states among the forty-five comprising the United States fail to have some effective supervision over the country pupils. I know the problem is not a new one entirely and yet it does seem to me that it is one of the most pressing we have to consider. And another thing; it does occur to me that there is no good argument why a boy in the country should not have the advantages of higher education quite as much as the boy that lives in the village and in the city. If it be sound argument that the high school is a necessity for the better education of the boy in the villages and the cities, the argument is equally good that the boy in the country should have the same opportunities. I cannot see why the township high school is not just as valuable to the township as the city high school, or the village high school is to the city or village. It seems to me that if anything it is more to be desired rather than less so.

Now, one other thing in educational matters, I wish to refer to only for a moment, for my time necessarily is limited. Section 3921 was passed last winter which gave you the right to transport pupils at public expense. A great deal of agitation is going on all over the state and a great many communities have taken advantage of this law, and I look forward to an increase in this practice within the next two or three years when we will find a great many boards of education transporting pupils to some one, two or three central points, and there putting them under a graded course of instruction and giving them the advantage of all that is to be obtained in the best equipped village schools. The law now gives you the ample right, so that is a question which I need not debate. If you will turn to the enactments of last winter, Section 3921, you will find that you have abundant power for it. Quite a number of boards of education, when their school houses become unfit for use, or burn, and for some reason it is not desired to rebuild or replace, are taking advantage of this law and transporting the children to some other district. They can do it at very much smaller cost and the argument for doing it is certainly very strong. There can be but one central building to care for under this arrangement, one roof, one heating apparatus, one janitor and one set of teachers; in short there can be a great saving in expense in caring for the property and uniformly there can be a decrease in the number of teachers. Many districts have so few pupils that they can almost entirely abandon the idea of the necessity of having a teacher and by taking advantage of this law they can secure all of the advantages of a good school at a reduction in expense; the cost of transportation not being very much. It is subject to the control, of course, of the board of education. It can be made large or small according to the needs. Local conditions of course will largely determine the amount of expense. I have not time to debate it. I will not present it any further.

I wish to say one further thing and then I will close. I hold in my hand the report of the Committee of Twelve on Rural Schools which Professor Hunt referred to. Our office has printed quite a large number of these and scattered them broad-cast over the state. We have a few copies left down there and if you will call we will supply the demand as long as we are able to do it, and you may keep your twenty-five cents in your pocket, as the State of Ohio will bear the expense. This is the report of the Committee of Twelve on Rural Schools, of which committee Mr. Henry Sabin was chairman. I turned down three or four leaves here to indicate some of the topics that are discussed in the appendices. Here is "Appendix A. Of some sociological factors in rural education. Appendix D. The county as the unit of school organization. Appendix E. Comparative cost of township and district schools. Appendix F. Transportation of pupils, etc. Appendix H. The farm as the center of interest. Appendix I. The country school problem. Appendix R. Intellectual and moral education." I submit to you whether these are not all fresh topics of interest.

In closing I will say that I take great pleasure in extending to you the courtesies of our office while you are in the city. I am glad to have met you and only sorry that I cannot participate more vigorously in the exercises of the hour. The schools of Ohio should be made better and it does seem to me that the farming communities are the places where the reforms should be most marked.

President Begg: I am sorry to say that we have now somewhat exceeded the time allotted to this important topic but the interest in it was so great and the discussion so good I felt I was doing nothing but right in permitting it to proceed to this length.

Professor Lazenby: Inasmuch as there is so much interest in this topic would it not be well to extend discussion and then meet earlier this afternoon? In order to get the sense of those present I move that the discussion be continued for ten or fifteen minutes, thus leaving time enough for the second paper, and that the third address on the program for this morning's session be postponed until this afternoon, and that we meet at 1:30 P. M.

Motion seconded by Mr. Stewart and carried.

Miss Hopley, of Columbus: I think it was unfortunate that the previous speaker, Mr. Bonebrake, was not introduced to the audience as the State School Commissioner. I do not think it was generally understood that the gentleman who just addressed the institute is the State School Commissioner of Ohio. His remarks would perhaps be better understood if that fact were known.

President Begg: Are there any further remarks upon this topic?

Director Thorne: I only want to call attention very briefly to one statement, that is this, that in the school which I tried to describe yesterday, the little tots were learning to write and read and spell, and more important than all of these three they were learning to see and to observe and to give descriptions of the natural objects which they brought into that school room and took care of there. Professor Hunt has brought out, I think very clearly the utter simplicity of this scheme, if we will only devise ways of affording the opportunity of carrying it out. The idea which seems to have seized upon so many of us is that it is something very intricate and very elaborate which can only be done with a great outlay of books and apparatus. This is not the case. The scheme is as simple as anything that could be devised.

Dr. W. I. Chamberlain, Summit County: Professor Hunt's argument was in favor of having the teachers in the country schools know something. Now I think we have a right to demand that the teachers of our children in the country shall know something, and shall know something of the future work of these boys and girls. I do not believe in fifteen years of everlasting arithmetic. There is no sense in it. I would rather have a boy go through Ray's Third Part and then spend his time in the study of something practical than to spend it in the higher mathematics. I would rather he knew something about the kind of mathematics he will want when he grows up than to know something about a whole lot of things that he will never need. Now one point further; the assumption of all those who oppose the introduction of any instruction whatsoever in what I will call observation, is that whatever you put in on that line you crowd out just so much "readin', 'ritin' and 'rithmetic." Now that is not so. You can eat more turkey because you have good cranberry sauce with it and you can fill a bushel basket with potatoes and then put in a peck of beans and then put in another peck of clover seed. What I mean is simply that your children will learn three times as much arithmetic and geography if they are first taught to observe, and if in connection with their geography they are taught the kind of things that grow on God's green earth. I tell you my friends unless this opposition to every sort of thing that is new can be stopped in some way in the country we are going to fall behind the rest of the world, and unless we give up the idea that it is necessary to spend five, ten or fifteen years on the three "R's" and grammar, well I won't say what I wanted to about grammar, but unless we give up the idea that the introduction of anything in the way of the study of observation of things is not to be used but is simply going to crowd out the study of reading, writing and arithmetic, our country schools will go to the dogs whether we have wagons to take our children to town or not.

J. L. Wyly, Granville: I was highly gratified with the address of Professor Hunt, but I am surprised at the idea that the agricultural interests of this country are in the hands of men who belong to the antediluvian age. I do not believe it. The mass of our country school teachers are farmers' boys and girls (applause). And I tell you they know something about stock raising and other agricultural pursuits. These professors will tell you that education is not simply working out a stated problem, but to educate a man you must teach him to think. While I honor our State University and the men at the head of it, yet if they are not teaching men to think and apply the things which they are taught they are failing in their high calling. I have taught mathematics and while I have not held the ideas in my brief sojourn of over fifty years in this work that we should confine ourselves to the three "R's" for fifteen years, I tell you that the study of these fundamental principles of our education are an absolute necessity, and I tell you further that today from my experience they are teaching everything necessary. But the great thing that the State University is accomplishing in my estimation is the fact that it is giving to the agricultural interests a prominence and importance which they have not heretofore received, and is bringing the practical knowledge of the farm up to the point of a science. I tell you I learned a great deal more in one year of work with my father than I did in the school, so far as practical knowledge is concerned. And a great thing these agricultural colleges are accomplishing is the bringing of that knowledge up to the point of a science, and making the young man of today realize that to be a farmer is not to be set down as a numbskull, but as a scientist. That is the point. We are giving character and dignity to agricultural pursuits, and I would be very glad indeed if we had twice as many pupils in our agricultural colleges and twice as many agricultural colleges. But, gentlemen, these things which some of you say are neglected are, I think, in fact taught to a greater extent than you imagine. I believe if we want any more of this kind of teaching, if we want to emphasize the importance of nature studies, we should advocate it in our city schools. Our country boys see some of these things and know some of these things. They have been brought up in their midst, and these very little things that the professor has spoken of you would not need to teach so much in the country as in the city schools. We have some excellent city schools, but I stand up here to say that the country school teachers in this land are doing the agricultural interests of the country a good deal of good. They are giving it character and stability, and I say all honor to them and may success attend their best efforts. (Applause.)

Mr. M. C. Morris, Butler County: Mr. President, just one word. Yesterday we were led into a discussion of this question, and today we have piled up discussion upon discussion upon practically the same topic. There is nothing practical so far as I can see which has been suggested. We are, at least most of us are, farmers and most of us with families at home, and we are all certainly anxious to give our children the very best advantages in the way of education. There has not been one word said about any text book upon these lines or any practical course to be followed out. There has been nothing said about any course of reading which we can direct our children in at home, or which will lead them into a study of these subjects. I would suggest that we have something practical and less of the theoretical.

Mr. William Markel, Pickaway County: I believe that in our country schools what we lack is system. There is a lack of system all over the state. We do not work in unison. I believe there should be some supervision, some head who could guide the course of the various schools of a given locality. There should be a broad foundation laid and it should work up to a common head and a common center. There should be some uniform effort on the part of the various country schools and the following out of a prescribed system so that we can all work in unison, all pull together. In short my idea is that a county should be divided and have one or two superintendents for each county. They should then come together and form a congress of some kind which should decide what kind of text books to use and the courses of study that each teacher should follow in every school throughout the state and that these men who do nothing else but superintend the schools should examine the teachers and grant certificates, and they should see that all of the schools are conducted in the way that they should be conducted, so that there will be some uniform course and uniform text books used in all of the schools, and they should all be conducted upon the same system, then they would all work in the same way and be able to accomplish much more.

Now I find that when we teach only theory it can not always be reduced to practice. I find that we have many graduates from our high schools in the city who have but little practical knowledge of every day business methods; and if you put money in a bank and tell them to draw a check on the bank and use it they would not know how to make a check. I have found graduates from the university up here who were certainly intelligent scholars and who had studied botany and physics and the various other higher branches of study and when we took them out into the field to show them some cattle that we were salting, a young girl who had gone through school with honor said, "You do not certainly milk all of those cows, do you?" I heard one of them remark to a neighbor that he always wondered why it was that farmers were so ignorant, that they did not know this or that when they came to the city. The farmer in passing along the road asked the university graduate, "What kind of a tree is that?" "I do not know." He said, "Why, that is a pear tree. What kind of a tree is that?" "I do not know." "Why, that is an oak tree." And a little further along he said, "What kind of a tree is that?" "I do not know." "Why," he said, "that is nothing but a common willow." And finally he said, "I did not know a person could get through a university and still be so ignorant. Any of our boys here in the country who are one-fourth your age could answer all of the questions I have asked you." These men who are educated in the colleges are educated simply in certain branches and they think that anybody who does not know as much as they do about those same branches is ignorant. I remember that some people came out from the city some time ago, among whom was a young lady who was educated up here in our State University and when we were passing a locust the young lady wanted to know whether those were lima beans growing upon the tree (laughter). She was an intelligent young lady and had gone through school with great credit to herself and she had a good education. These are some of the practical things that we should learn. I have found this out. I was a teacher many years ago and I have had many school teachers in my house since and I know that the country school teachers when they are trying to do good work labor from early in the morning until ten o'clock at night. We have two in our house now and they work until ten o'clock at night to prepare the lessons for the next day. They were prepared for their life work first in the common school, then in the high school and then took a course for special training to equip themselves to teach in the common schools. If the teacher does his work properly he certainly already has enough to do. I do not say that some of these branches should not be put in but I believe like this gentleman over here that we should first lay the foundation and make it in such a way that when our children leave the common schools they can go up into the higher schools for the purpose of special training. I believe that the Boxwell law should be so amended that every township will be compelled to furnish higher education than the common schools. I believe that the children in the country districts are entitled to all the advantages of a higher education that are afforded to the children in the cities (applause).

President Begg: I am sorry to say that we will have to arrest the discussion at this point. The time is already passed which has been allotted for it and we will proceed to the next exercise upon the program.

We will now have an address by Dr. Georgia Merriman, of Bucyrus, O., whom I now take great pleasure in introducing to you.

FUEL VALUES OF FOODS.

By Dr. Georgia Merriman, Bucyrus, O.

"We may live without poetry, music and art,
We may live without conscience, and live without heart,
We may live without friends; we may live without books;
But civilized man cannot live without cooks.
We may live without books, — What is knowledge but grieving?
We may live without hope, — What is hope but deceiving?
We may live without love, — What is passion but pining?
But where is the man can live without dining?"

Paradoxical as it may seem we are a nation of gourmands and yet are starving to death. The physiological chemist declares that by actual measurement and oft repeated experiment he has proven that the daily food requirement of man is twenty-eight hundredths of one pound of tissue building material, one-quarter of a pound of fat and one-quarter of a pound of carbohydrates or heat producing materials, and he also tells us how much of each of these materials are found in each pound of food and yet half the race lives on the work ration, while the other half is, alas, working on the life ration. It is just as easy to measure the amount of strength developed in man by a fixed amount of food properly digested as it is to calculate the power of an engine; for the one we use as a unit of measure the power required to raise thirty-two thousand pounds one foot high per minute; and for the other our unit of measure is called a calorie and is the heat required to raise one pound of water four degrees Fahrenheit. The new Respiratory Calorimeter described by Professor Atwater and used at the experiment stations, leaves but one unknown quantity in the food equation for man, and that is the digestive power of the man himself. Those of you who have seen the cut in Professor Atwater's article will remember that the man sits in a wooden box eight by ten feet lined with zinc or copper, idly toying with his pencil, no concentrated effort, mental or physical, while his life ration is measured by two thousand five hundred calories, and the man moving the arm of a lever up and down for eight hours, when his physical demands for food are nearly doubled, and to meet that demand his work ration is raised to four thousand five hundred and fifty calories; or reading these figures in more common terms: the man required six ounces of butter, twelve ounces of potato, thirty ounces of meat and forty-four ounces of bread while engaged in manual labor and one-half of each of these food products sufficed when idle. Although in a general sense "heat is life, and cold is death" we must discriminate between heat and its measurement. It is measured in the laboratory by means of an apparatus called a calorimeter which obtains the prefix respiratory because it also measures the amount of air conveyed to the victim in the box.

The quantitative analyses of food products, as conducted at the experiment stations by the Department of Agriculture, reveal the necessity of a revolution in culinary matters. If the per centage of tissue building material in every pound of food can be measured in the laboratory, may not the food dosage become as exact a science as the dosage of medicine? And condensation of food alkaloids soon enable man to carry his dinner in his vest pocket? The revelations of this exact method are rather startling, as for instance, if the cook decides to furnish salt pork for breakfast instead of beef she must multiply five ounces of beef by twelve to furnish each person with the requisite amount of protein, and now she has fastened upon them an excessive amount of carbohydrates and fat. This subject of substitution in cooking is limitless and may lead to eating by weight as the fad of the next century. In the meantime, scientific enthusiasts *in* the respiratory calorimeter and out of it are seeking to bring helpful and accurate knowledge to the masses, and confidently hope to reduce the number of worn out human engines wrecked by wrong kinds or quantities of fuel.

The physiological functions of animal life are increased and maintained by two forces. The nerve cell must be fed with pure oxygenized blood or the power to respond to any stimuli from within or without is lost and atrophy occurs. Nature is a very coy mistress; she coquettes with our blood; she coquettes with our breath, and we pass into the beyond; which function ceased first the most learned can only conjecture. With the cessation of one of these functions that mysterious thing we call life passes away. Without air the chest walls remain stationary, and without blood the pulsations of the heart intermit and then cease altogether. Air and blood are essential to keep human machinery in working order and other things being equal we ought to live until the machinery wears out. The prevailing opinion, and the one upon which all our American life or arrangements for that life are based, is that outside or inside the nervous system must be goaded with a stick to keep nature at work. The truth lies far from this isothermal line; if the nerve cells were properly nourished they would perform their duties without being whipped into their places by external stimulants. No nerve center or ganglionic filament will call for stimulants while it is receiving nutritious material sufficient to faithfully perform its telegraphic services in the human economy.

The temples of the ancients were built and rebuilt on the same foundation stones, because, according to their belief, none other would please the God to whose worship they were dedicated In much the same fashion do we make a fetich of old wives' fables and old wives' tables. On sunny days in the garden of Eden, Miss Anaconda, having swallowed an undressed chicken, could, in process of time, with the help of air, earth and sun, dispose of her meal of meat, bones and feathers, by composing herself and concentrating all the forces of her nature upon that one feat, and this by animal instinct alone. Man, with all his knowledge, improved methods of acquiring it, and electrical devices for his own comfort and wealth, is still following Miss Ana in his methods of ingesting his food in so indiscriminate a manner that it defies the whole realm of chemistry to furnish dissolvents strong enough to accomplish its digestion: and instead of the noble, sweet and loving creature man should be in his present stage of development we have dyspeptics with sour stomachs, sour tempers, and sour visages. We are a race of thinkers and a race of workers; we undertake more and accomplish more than any other nation on the face of the earth. How do we do it? At the expense of nerve tissue. The vast resources of our country mock man's ingenuity and cunning if he cannot acquire more fame and more money than other nations. Natural ambitions with our national environments stimulate us to such herculean efforts to secure the good things of life, that we heedlessly risk all power to enjoy them to secure only their possession, and men are constantly increasing their activities, the wear and tear on nerve forces, without a proportional increase of oil for the gearing, or fuel for the flame under the boiler. Is it any wonder that physical wrecks are strewn everywhere along our pathway?

The adulteration of food supplies is attracting considerable attention, but little is thought of the failure to properly cook unadulterated food. Until about 1880 those who wished to know about the chemical composition and nutritive values of food materials were compelled to depend upon analyses of European products; of late American scientists have been making investigations and the results have been tabulated in government reports from the experiment stations under the Department of Agriculture. These scientific experiments are the most valuable find of the age and should work a reformation in our kitchens. (Illustrated with chart.)

Food is that which, when taken into the body, builds up its tissues and keeps them in repair, or which is consumed in the body to yield energy in the form of heat to keep it warm and create strength for its work. To be healthful it must be adapted to individual wants and must supply the different nutritive ingredients in the kinds and amounts needed by the body to build up its several parts, to repair them as they are consumed by constant use and to yield energy in the form of heat and muscular power, and these ingredients should be easily digested, for we live, not upon what we eat, but upon what we digest. Just why individuals differ in their ways of utilizing their food and how to measure the differences and make dietary rules to fit them exactly, are problems which the physiological chemist of today is far from solving. The fact is the whole subject is new and the best we can do, as yet, is to make general estimates for the average rather than isolated cases. Different methods of cooking show such different amounts of assimilable material that it magnifies the cook's office. Boiled potatoes and Saratoga chips differ largely in nutritive percentages; the latter triples the protein, doubles the carbo-hydrate and quintuples the fuel value of the former. The cook may add thirteen per cent. in digestibility to dried peas by cooking them many hours. Theoretically, bread should be eaten by every one because two-thirds of its whole weight is used up in the body; but it never gets its deserts in the oven. When properly baked and digested it develops heat and mechanical force but yields little protein. The protein, carbo-hydrate and fuel values of various kinds of bread are given. White bread yields nine and one-half per cent. of protein, fifty-two and eight-tenths per cent. of carbo-hydrate and has a fuel value of one thousand two hundred and five calories; brown bread yields five per cent. of protein, fifty and seven-tenths per cent. of carbo-hydrate and has a fuel value of one thousand one hundred and thirty-five calories; gluten, or whole wheat, bread yields eleven and one-tenth per cent. of protein, forty-eight and six-tenths per cent. of carbo-hydrate and has a fuel value of one thousand two hundred and ten calories; rye bread yields ten and one-tenth per cent of protein, fifty-five and nine-tenths per cent of carbo-hydrate and has a fuel value of one thousand two hundred and fifty-five calories. Crackers average five per cent. of protein, seventy per cent. of carbo-hydrates and a fuel value of two thousand calories. To secure the digestion of the starch cells in all kinds of bread, crackers and cereal foods, they must be subjected to a high degree of temperature, two hundred and twelve degrees or over, for a short time or to a lower degree a much longer time, when the starch cell walls are broken and the heat forms dextrine, through which the starch must pass before it is ready for the last change into sugar, under which form it is utilized in the body. The color changes to brown, hence the German zweiback, or twice baked bread, is the most healthful, its sweet taste proving that the dextrine step has been taken in its chemical evolution.

Animal foods yield a larger percentage of protein than vegetable and it is much more readily digested than protein from the vegetable kingdom. (Illustrated with charts.)

The oyster industry employs fifty thousand men and fifteen millions of capital and the nutritive material contained in oysters costs seven times as much as the protein obtained from the cod. One quart of milk contains the same amount of nutrients as three-fourths of a pound of beef and six ounces of bread at less cost than either of the others.

It could be easily demonstrated that a fifteen-cent luncheon composed of nine different food materials did not have any greater nutritive value than the four-cent luncheon composed of a pint of skimmed milk and ten ounces of bread. It certainly is a most marvelous fact that in nature's chemical laboratory, situated somewhere within the physical economy of the ruminating animals, is evolved the most perfect food ever found for man. The mild-eyed Jersey "chewing her cud" in your pasture today has within her walls the most successful manufacturing plant in existence. Just how the grains and grasses take from the brown earth its succulent juices and yielding them again to the gentle but constant pressure of mastication, deftly returning the undigested portions for a re-dipping in the salivary secretion, is mysterious, but, with the usual accuracy of nature's laws, there is no friction in the machinery and no failure in the product. This white, opaque, pre-digested liquid, so essential to man's retention on this mundane sphere, should be utilized more as a food on account of its inexpensiveness, its digestibility and its prevalence universally. However, we must be content to revolutionize the culinary department slowly. We are advancing but have by no means reached the goal to which science points the way. We must not only learn to satisfy hunger and please the palate, but we must learn how to do both of these and at the same time produce heat, health and energy in the human body. It has been said "we must make food increase the wageearning capacity of the manual laborer, the brain power of the brain worker. It must be made to increase the staying power of men and women of every class. In short, the scientists demand that the food bill of the world shall increase its wageearning capacity, until the credit side of the health ledger shall show not only debts paid, but a balance for investment in pleasure — in work that will increase the good will of man." Why should not the mother of this century have suspended in plain sight simple, comprehensive charts, giving the food values of certain commonly used articles of diet, the time required to digest them in their differently cooked forms and the amount of energy they thus yield? In a moment she could thus become possessed of the knowledge the chemist and the practical experimenting physiologist have taken years to acquire. Here in my humble opinion is where the state should lend its aid in simplifying and bringing to the masses this knowledge of which they stand in need. But at present we must content ourselves with a few generalizations taken from these same centers of investigation.

The protein of our ordinary meats, fish and milk, that is, the albumens obtained from them, are very readily digested. The proteins or albumenoids of vegetable foods are much less completely digested than that of animal foods. Of that of potato, whole wheat, and rye flour, one-fourth or even one-third may escape digestion and thus be useless for nourishment. Roughly speaking one-sixth or one-seventh of the protein of wheat flour, cornmeal, beans and peas may be assumed to be undigested when cooked and eaten in the usual way.

Much of the fats of animal food may at times fail of digestion. Experiments show that about five per cent. of the fat of meat, milk and eggs, also butter will escape digestion. The carbo-hydrates, which make up a large part of vegetable foods, are in general completely digested. Sugar yields one hundred per cent. of carbo-hydrates and has a fuel value of one thousand eight hundred and sixty calories and is completely digested. The cereal foods yield starch which, after its many chemical changes, ends in sugar and is thus used in the body.

The progress of human knowledge and the pangs of human stomachs are at last teaching enlightened, suffering humanity the care needed by these wonderfully constructed human machines. We are coming to realize that not only our health, our strength and our incomes, but our higher intellectual life, and even our morals may depend upon the care which we take of our bodies and that one of the essentials to right thinking and right living is right eating.

Having made provision for man's physical perfection and development, we may the more hopefully look forward to his spiritual evolution.

At the conclusion of Dr. Merriman's address, President Begg said: We now have a few minutes for a discussion of this very interesting topic.

Professor Thomas F. Hunt of the Ohio State University: I tried a little while ago to say something about the relation of some of the fundamental truths which ought to be taught, to our common schools. We have now had a practical illustration it seems to me of that larger realm of knowledge which should be taught in our public schools. I would like to ask you in all seriousness if you think any girl ought to go out of the high school without having had some of this information? And I would like to know whether it would be class legislation which requires every girl to get some of this information upon which the fundamental principles of agriculture are based as has been so excellently illustrated by the speaker. Dr. Merriman has my greatest thanks for giving you in this way a practical demonstration of what I was trying to force upon you.

Dr. Merriman: I would like to say — perhaps you have not all noticed it — that the city of Chicago and some of our larger cities are adopting just such teaching for their manual training department for women.

Miss Hopley: I would like to ask Dr. Merriman with reference to the matter of bread. Would she suggest any change in the bread for those who like fresh bread?

Dr. Merriman: In my opinion the line of demarkation of the crust of the bread and the white portion within marks the place for a person to leave it. The crust we know is properly cooked; we never do know whether the other part is properly cooked or not until we have tried it in our digestive apparatus, and sometimes it throws that out of order. The most healthful bread I know is that made by the French bakers, which is made of strips and not allowed to rise over night. That is to say it is very light and very porous inside, and in fact there is very little inside to it. It is most all crust. Three of the strips are braided loosely together and then baked in the oven until they are thoroughly browned, and this bread by the way is sold by the pound as all bread should be.

Mr. M. C. Morris of Butler County: I would like to inquire what is the difference between whole wheat flour and Graham flour?

Dr. Merriman: I am afraid I am not able to give you an exact answer; that is an answer that would satisfy a scientist, because it has just escaped my memory at the present moment the difference in the process. There are a good many things in reference to the subject which I do not attempt to keep in my mind. I have looked up the exact difference several times but I do not recall it just at this moment. If any one can answer the question I would be glad to have him.

Mr. Morris: A good deal has been said lately about whole wheat flour. In the corn show which I referred to yesterday there was a prize given for the best loaf of whole wheat bread and there was a loaf of brown appearing bread there and I made an effort at that time to ascertain the difference between the two breads. Of course it is a difference in the process I suppose. I presume you all understand what brown flour is. It is almost the whole grain, or probably a little of the bran taken out, according to what you order when you go to the mill. But just what this whole wheat flour is I want to know. I would like to know what portion of the grain it is. I do not think the bread I referred to was anything but ordinary brown bread.

Professor Thorne: As I understand the matter, the whole wheat flour is simply the entire grain with the coarsest bran removed, while the germ is ground with the flour.

Mr. Morris: Then what is brown bread flour?

Professor Thorne: Brown bread flour includes the bran.

Mr. John L. Shawver of Logan County: There are two questions I would like to ask for information. The first is if we compare these dietetics as given is it not true that many of us eat too much because we do not have the ingredients properly balanced? We see by the chart that there are quite a large number of them which are considerably larger than those which are marked standard.

Dr. Merriman: To answer that I must go back a little. In the first place we live upon what we digest and not upon what we eat. And just why different persons differ in the methods of utilizing the same kind and quantity of fuel is a question which the physiological chemist of today is far from solving. The only thing we attempt to do is to make average dietetics, dietetics that will satisfy the average individual and isolated cases must be treated separately.

Mr. Shawver: The other question was this: the value of sugar I see is placed at one hundred per cent. I have been led to understand that ninety-eight per cent. of sugar is nutrition and the balance is extraneous matter.

Dr. Merriman: I think you will find the average yield of carbohydrate value in sugar is given at one hundred per cent., but it might be in making a dozen experiments that some would fall to ninety-six and others perhaps would run fully up to one hundred. I think the average is usually given as I have given it. At least I took it from some one of the pamphlets from the experiment station.

Mr. Shawver: Would you not give us the number of the government bulletin to which you referred in your remarks so that we may procure it if we desire?

Dr. Merriman: The bulletin may be obtained by simply sending your address and a request for the same to the Department of Agriculture in Washington. The numbers of the bulletins which I think would be of the most value to you are twenty-three and twenty-eight. I think that all the information that may be desired, especially after having heard it explained, you will be able to get from those two bulletins. Now every woman who hears me — and I am sorry there are not more of them here — can sit down and from this chart, or from the bulletin which she will obtain from Washington, make out her dietetics for the day and make them according to the work she, her children and her husband are doing.

Professor Wm. R. Lazenby: I would like to ask Dr. Merriman one question, and that is whether taking it as a whole and taking the average run of our foods, cooking really adds to its digestibility? Of course it adds to its palatability and adds to its safety but it is claimed that many of our foods are more digestible raw than cooked. For instance it is said that a raw egg is more digestible than a cooked egg, and that raw cabbage is more digestible than any form of cooked cabbage and so on. I would like to inquire how far does this apply to all foods?

Dr. Merriman: That is a question that is debated by the specialists. For instance I would say that a specialist who is a vegetarian would think that only vegetable foods should be eaten, and some of them maintain that they can live in a perfectly healthy condition from the use of uncooked vegetable foods only. In fact I have heard of a family living in California who have not tasted cooked food for years and they claim they are in a perfectly healthy condition. That this case should prove that we do not need to cook our food I am by no means ready to accept; but how much is gained by cooking is a debatable matter. I can, however, tell you the percentages that are gained by certain methods of cooking. For instance whole peas gained thirteen per cent. in digestibility by cooking for a long time, and I believe very much in Professor Adkinson's theory of long, slow cooking to dispose of this starchy matter. I believe the starchy matter is the element in the way of digestion in most of our foods and I know of no other way to dispose of it unless we use some strong chemical, and I would prefer the chemical rather than pouring medicine into us.

President Begg: The time has now arrived for our noon recess. I want to urge upon the audience the necessity of coming back at the hour appointed in the motion as we have a number of instructive addresses for the afternoon which may demand considerable attention.

On motion a recess was then taken until 1:30 P. M. of same day.

AFTERNOON SESSION.

Wednesday, January 11, 1899.

After calling the institute to order at 1:30 P. M. President Begg said:

Before we begin our program I wish to call the attention of the institute to the fact that there has been a mistake made in the place of meeting for the Ohio Short Horn Breeders' Association. The program reads that the meeting will be held at the Great Southern Hotel, but I am informed it will be held at Townshend Hall at 7 o'clock tonight. The programs for the meeting are here and any one wishing to procure any of them can do so at the desk upon the conclusion of this session.

Those of you who were here this morning know that we had to defer one of the addresses on the morning's program until this afternoon. This is an address upon "The Modern Beef Animal and How to Produce It." Let me say to you for the gentleman who will address you on this subject that he is producing the highest and best quality of the modern beef animal himself and therefore certainly knows how to produce it. He can speak to you from practical experience upon this matter. I now have the pleasure of introducing to you Mr. O. E. Bradfute, of Cedarville, O.

THE MODERN BEEF ANIMAL AND HOW TO PRODUCE IT.

By O. E. Bradfute, Cedarville, O.

Mr. President: — I was looking to see whether or not I should say "and *ladies* and gentlemen"; I see I may say *ladies* and gentlemen. I am glad to be able to say this, for the last time I addressed this meeting I was not able to begin in this way. I am pleased to know that the ladies are taking an interest in these meetings.

I am to try to talk to you this afternoon upon "The Modern Beef Animal and How to Produce It." I am not going to talk from the standpoint of a breeder of a special class of cattle particularly, but I am going to treat rather of the subject from the standpoint of the average farmer throughout the State of Ohio, not dealing so much with special or extremely fancy production as with what each and every farmer is able to produce. I think that the farmers of the State of Ohio have learned one lesson; perhaps not all of us have learned it, but we are learning it, and that is that we can not produce wheat and corn and sell it in the raw state in competition with the great West and Northwest. It seems to me that the salvation of the Ohio farmer must be in the feeding of his grains and producing an article that is superior to the articles that are produced in the west along the lines of live stock. It is within the realm of the average farmer of Ohio to produce a class of cattle that is indeed better than the average western farmer is producing; and it is the man who produces the highest class that gets the best price for his article. We want to produce that class, and that class only, which will make us a profit upon our feed. I have said "the modern beef animal." This very statement would indicate that there is an animal being produced perhaps that is not "the modern beef animal." There was a time when the man who could produce a steer that would weigh two thousand pounds, or even eighteen hundred pounds, had reached the climax of beef production. That time has passed. It is not the eighteen hundred-pound steer that is bringing the highest price upon the market today; and we farmers as farmers are somewhat slow to learn that it is what is termed "the handy little butcher's bullock" that is bringing the highest price. It required the hog cholera to beat into our heads the fact that the farmer could produce a two hundred-pound porker at a better average profit than he could produce a four hundred-pound porker; and we beef men have been slow to learn that more profit lies in the smaller and more quickly maturing animals than lie in the larger and more slowly maturing kind. Why is this so? I want to lay this down as a fact that in a calf the first five hundred pounds is the easiest and cheapest produced; the next five hundred pounds will be the next easiest and cheapest produced; and the third five hundred pounds will be the most costly if, indeed, it is produced at a profit at all. So that we want the early maturing steer and we want to reach this just as quickly as we can.

Now I want to make another general statement along the same line. Suppose you have two steers upon your farm, one weighing thirteen hundred pounds and the other one thousand pounds. It will take about as much feed to keep your thirteen hundred-pound steer weighing thirteen hundred pounds, without either gaining or losing, as it will to make a handsome gain upon your one thousand-pound steer; and if the two are fed side by side, and each fed a sufficient amount of food to make three hundred pounds of gain, and you go to the market with one weighing sixteen hundred pounds and the other weighing thirteen hundred pounds, if he is of the right quality he will outsell the sixteen hundred-pound steer and you have saved a year, or a part of a year, of his keep and you have made a gain that is of the cheapest form and which will bring to you the most money.

Now before we say too much about the modern steer, let us see if we can describe what a modern beef animal should be. I have here before you a chart which perhaps is too small to be well seen throughout the hall. It is a picture of what I may term a typical beef animal. In this case it is a bull instead of a steer, but it needs very little correction to make the proper steer form. It is your typical feeder's animal, your modern beef animal. Your modern beef animal should have a very short head and should be very wide across the head or wide between the eyes. It is rare that you find a long headed steer that is a quick maturing animal and a good feeder; but almost invariably your short headed, broad headed animal is a quick and a good feeder, and those characteristics usually show a kind and good disposition, and that is an important element in a good feeder. His eyes should be clear and brilliant, not necessarily staring out, but you want a clear, bright eye because it always indicates a good constitution. Your modern beef animal is a muley. I say this in all deference to the horn cattle men. I want to say that if you go upon the market in Chicago and want to buy a car load of feeders they will cost you from fifteen to twenty-five cents per hundred more if they are muleys than they will with horns on. More than that, if you go into the Chicago market with a car load of steers for sale you can get a better price for muleys than you can for the same quality of horned cattle. I care not whether they are natural muleys or whether they have been dehorned, but they must be muleys. Furthermore, it doubles or nearly so the capacity of your stable room for feeding purposes.

Your modern beef animal has a short neck, the shorter the better. In following out the idea of the typical modern beef animal the aim should be to produce the kind and character of animal which will furnish the most of the kind of meat that people want to buy, and they usually do not want to buy very much neck. Neck is very poor eating. I have never had anybody dispute this statement except some of the younger boys (laughter), but we are talking about cattle necks. It is very poor eating. His back, from the point of the shoulders, should be straight and level. It should not be too long, but moderately short. We want a regular "Dutchman's horse," so to speak, in selecting the shape of our modern beef animal in that regard. The back should be broad at the shoulders, back of the shoulders and over the central part of the ribs and at the loin and over the rump. The ribs from his back should not start out in the form of a roof but should start out straight from the back and then gradually turn and come well down on the sides. You want a long rib as well as one well sprung out. You want him full back of the shoulders, very full as I shall show you later, as full as you can get him. You do not want a hollow place back here (indicating). You want the chest full and well developed. That represents the constitution of the animal and indicates his lung power and heart action. You want the hind quarter running well down towards the hock, the further down the better. You want it well filled and running well down. You want the underline as near parallel with the topline as possible. You want both the back and the forward flanks well filled down. You want him on the shortest of legs, and the shorter the legs the better. I have never seen one which I thought had too short legs. What is the use of the farmer's growing so much soup bone, for that is what it goes into — soup bone and glue. That is not where the farmer makes his money. You want to grow the legs short. More than that, you do not want the bone too big. There was a time when the man who wanted to purchase an animal to head his herd selected a big boned animal, and indeed we get letters by the score yet saying "we want a big boned animal." Why do you want a big boned animal? You can not eat bone. When you go to the butcher shop and he cuts you off a piece of beef, about the first thing you say to him is, "Won't you cut off some of that bone?" If that man was a farmer and I was a butcher I would say, "No, sir; you sold it to me and now you will have to eat it. You will have to take it at my price. I paid you for it." You do not want too much bone, you want a good bone, you want a tough bone, but not too much. Bearing out that idea, I have in my mind just at present a cow that weighed one ton and which is known all over the United States as a splendid animal, a prize winner. Yet that cow around her fore leg and below the knee can easily be spanned by my thumb and finger. I have known that cow to walk eight miles without lying down. Perhaps you needed big bones when you had to drive cattle to Baltimore, but that time is past.

The animal from which this picture was taken had legs so short a foot rule could not be straightened between the brisket and the ground. He was that close to the ground. Then when you have an animal made in this form, you want something else, which is a very important factor, and that is quality. I never have heard any one whom I thought could properly describe quality. It is one of those indescribable things. But as near as I can tell you it is that character of animal that when you put your hand upon him his flesh is not too soft, it is not too hard, and yet it is mellow, and it feels as if you would like to lay your head over against it. Just about right for a good pillow in fact, comfortable and easy. When you jostle him on the sides there will be a movement quite a way out from your hand, not too far because that would indicate softness. The hide should be moderately thin and mellow and the hair in a glossy condition. The hair is always one of the best indicators of thrift that we have upon the feeding animal. Quality is that characteristic of an animal which when you see the animal walking off from you a little way and watch its graceful carriage and stately character, the water begins to trickle out on each side of your mouth as you think of the juicy roasts that he is to make. That is as near as I can tell you what quality is. You have to learn it from experience.

Now in order to more carefully draw out the qualities of a beef animal I have represented here what we call the dairy type. I want to call your attention to the very marked difference of these two types of animals. You will notice, as I said before, that the beef animal is rounded out and full in every particular. Every part of him is rounded out completely. You will notice on the other hand that the typical dairy animal lacks many of the important characteristics which are given to the modern beef animal. This, by the way, is an exact outline of one of the most noted dairy animals in the country. You will notice that this cow has a double pyramidal form. Notice how angular she is about the shoulders and about the rump and how this line is brought down here in the form of an angle. She is an angular animal from beginning to end. I want to call your attention particularly to the very great difference between the character of these two animals. In order to draw that out a little more fully, we have taken this same beef animal, which we have here, and reduced him in size to a twelve hundred-pound steer. We have here a first class twelve hundred-pound steer, and he must be first class and not an ordinary one. We are not talking about ordinary cattle, but we are talking about good ones, first class ones. A first class animal will dress about eight hundred pounds of meat. He will be a very good one if he dresses eight hundred pounds; an exceedingly good one. But suppose that he dresses about eight hundred pounds. We have this animal cut up as he is cut up for sale to the retail trade in the eastern markets like Pittsburg and places of that kind. Here we have cut the animal up into beef and it will perhaps interest you to know just how they cut them up. I want to call your attention as we go along to the fact that nearly all the value of this animal lies above that line. Hence I say we want the back broad, the broader the better, from beginning to end. You will notice that right in here, beginning with the shoulders and running back a piece, is what we call "the prime of rib." We had that upon the hotel table today, at least it was upon the bill of fare "prime of rib." That is the favorite roasting piece in first class hotels in the larger cities and the piece most largely in demand. If your steer is of the proper sort there will be one hundred pounds of prime of rib and it sells upon the eastern market, or did when this chart was made, (and it sells higher today) for fifteen cents per pound, and that piece of meat alone in that steer brings fifteen dollars. Right back of that is sixty pounds of porterhouse steak which sells for twenty cents per pound and right back of that is eighty pounds of sirloin which sells at fourteen cents per pound. You will notice that we have three different kinds of meat all running right along the back, amounting to two hundred and forty pounds, which sells for thirty-eight dollars and twenty cents, or more than one-half of the value of the entire animal as he is put upon the market lies in those three pieces.

Now I have heard men say that they can take a dairy breed of cattle and feed them out and secure practically the same results. I have produced this chart simply to show to you that it would be an utter impossibility from the very nature and the very structure of the animal to produce one hundred pounds of prime of rib on a twelve hundred-pound carcass of the character of the dairy bred animal. It is not simply improbable, but it is utterly impossible to do it.

The dairy men in this country have a law, and I hope they will get it enforced, prohibiting us beef men from making butter out of our tallow, and it is right to do it; but I want to say that about the next law we want is to prohibit the Jersey man selling a mixed animal with Jersey characteristics or any other dairy type, to feeders and representing them to be good feeding cattle for beef purposes. I am sure that you are injuring us far more by doing this than we beef men are injuring you by selling our tallow and palming it off for butter; because no man can make a success in feeding an animal of that type, as it is impossible from the very structure of the animal to put that much flesh upon it.

You will notice again that here we have rump, forty pounds at ten cents, and here is round, sixty pounds at twelve and one-half cents. The only piece of meat, selling for a good price, which lies below this line, is right in here, and hence I said that the hind quarter should be well filled down towards the hock. The entire remaining portion of the animal sells for six cents per pound or under. I told you we wanted no neck or as little neck as possible. In this animal we have thirty pounds of neck which only brings five cents per pound.

Now if that is the kind of an animal you want, how are you going to produce it? When we talk about producing a beef animal, I want to begin with the grandmother and I would not object to beginning a little farther back than that. I would want to know that his ancestors had been strictly of a beef type. I do not want one drop of dairy blood in his veins from any source. Every drop of dairy blood that you get in the veins of a beef animal simply damages him that much from the feeder's standpoint. I have no fight against the dairymen. All honor to their cattle in their place. But their place is not in the feeder's lot, because no man can make a profit out of that kind of cattle feeding them for a first class market. So I say I would like to begin with the grandmother and I want that grandmother to be one of three leading breeds of cattle. I would want her to be either Shorthorn, Hereford, or Aberdeen-Angus, or some animal running into those three breeds. Polled Durhams are nothing more nor less than Shorthorns. They are recorded as Shorthorns. She must be one of those three breeds if you are going to feed cattle with success. We like to have her calves come in the fall of the year rather than in the spring. The reason for that you will see as you go along. When we go out to the barn lot in the late fall or early winter and find there a little calf, we begin at once to develop it. If he has not had his first meal, we see that he gets it, and gets it properly. Right then is the time to begin to be patient. You can not afford to abuse that little calf. You can not afford to abuse his mother because that calf is perhaps the year's profit to be had from that cow. Rightly then you want to begin to take good care of him. I have known of men when they went out and found a little calf that did not seem to know how to take his first meal correctly, to begin to abuse him. My friend, that calf is entitled to a great deal of respect. He knows much more than you did at the same age and is much more able to take care of himself. He is entitled to your respect and he ought to have it. We want this little calf to have the first milk that is taken from that cow's udder. Nature intended that he should have it and it is a mistake if he does not get it. You put a little calf on a cow that has been in use for some time and you very probably will have a sick calf pretty soon. After the calf has had its first rations, then take the rest of the milk from the cow's udder, and take it clean. To my mind there is no one cause that has been so prolific of scours among calves as this one habit of allowing the milk to accumulate in the cow's udder from one day to another. You create a feverish condition and whenever you have a feverish condition in the cow you soon have it in the calf and a feverish condition in the calf usually means "scours," and probably the loss of that calf. For the first three days you should allow this little calf to remain with the mother most of the time but watching carefully as to its nursing and keeping the cow's udder cleaned out each time or at least twice or three times a day after the little calf has nursed. After the third day our method is to turn the cows in to their calves and out twice a day. We have two or three reasons for this. One of the principal reasons is that when you allow the cow to go to the calf at night and morning, the calf is being constantly handled. It becomes used to you and you to it. It becomes at home. The cow forms the fixed habit then of letting her milk down at night and in the morning, and should you wish to wean the calf, you have not ruined the cow for milking purposes because she has established this fixed habit and will still give down her milk regularly at night and in the morning, whereas if you let the calf run with the cow, especially out in the field, when you wean the calf the cow will go dry nine times out of ten and will be ruined as a milk cow forever afterwards. After this little fellow has become fourteen days of age we begin to feed him a little. Never before fourteen days, because a calf does not get his cud as we say until about fourteen days of age. I do not want anybody to think that the cud is simply a dish rag. It is not anything of the kind. I have heard people say, "Give the cows dish rags when they lose their cuds." As all of you know a cow has three stomachs, and the little fellow has not yet learned the art of taking his food into the first stomach and bringing it up and chewing it over until he is about fourteen days old. If you see a little calf under that age chewing hay or any other kind of food, take it from him or you are very likely to have a sick calf. After about fourteen days of age or perhaps a little longer, we put a little shelled corn upon a low board, about two feet from the ground, and we put the board in his box and put four or five of these little fellows together if we can, or whatever number we may have of the same age, and we feed them a little shelled corn. Be careful not to feed them too much. In your feeding operations never overfeed. Give them but a little shelled corn, a handful to three or four calves along on this board and you will be surprised to see how soon they will learn to eat it. After they have learned to eat that we then feed a ration composed of about one-third of shelled corn and one-third whole oats and one-third bran. A great many people grind their oats, but we have never ground ours. The object of this is to give the animal a food that will make growth and not too much fat. It is not the desire to fatten these little calves just now but it is the desire to keep them growing. These calves are handled along in this way and allowed to run back and forth to their mothers. There is nothing better for a calf than milk except one thing, and that is simply more milk after it gets old enough to take it. Keep them on that milk. I have heard of men developing their beef animals upon hay-tea and all that sort of thing, but all of those that I have ever seen developed in that way were the style of calves that were big in the middle and little at both ends. We do not want to grow that kind of calves for beef These little fellows are carried along in this manner until they are about six months of age. Then if you have handled them carefully and properly and fed them correctly, you have calves that will weigh about six hundred pounds each at six months of age. You may say these are good calves. Yet there are plenty of men in Ohio raising that kind of calves year in and year out.

Now another thing with reference to the raising of calves. Don't put them away back in a dark stable and leave them shut up there. Let your calves have a nice, loose airy box and let them out every nice day for a play and frolic. Do not suppose that a little calf because he is getting plenty of milk does not need any water. Many is the time that I have seen a calf stop in the middle of his nursing and go and get a drink of water and then come back and finish. The little calf wants water. After he becomes a month old he should have water before him all the time, you would be surprised to see how much he will drink in addition to the milk he takes.

I said that we wanted these calves to come in the fall. Our reason for that is simply this, when spring comes we then have them ready to wean, weighing six hundred pounds each and being six months old. We then let them out on some early grass, keep them from their other feed for a day or two and they come in to their mothers about two or three nights, but about the third or fourth night you will discover that they have forgotten to come up. They have weaned themselves. That is one of the greatest secrets in the raising of a calf and its transmission from a calf to a beef animal. They now begin to be animals upon their own hook and you want to succeed in crossing that period without losing any of your gain. How often do men in the weaning of their calves lose fifty or even one hundred pounds in the effort to wean them. You never want to lose a pound if you can help it. Those calves then go out on grass for the summer. We do not feed them any during the summer. All they have is mixed grass. We like a mixed grass; blue grass, clover and timothy; the three grasses combined if you can get it. Then they must have plenty of water and salt and the water should be placed where they can get all they want at all times. When the fall of the year comes, up come your calves big, lusty steers. You bring them up and if you have an early maturing kind, you are ready to feed them out. Our method is perhaps somewhat different from many, and many of you may not term it modern, but it is the method that is now practiced by the majority of feeders throughout the United States. It is the method that has produced the top priced cattle upon the Chicago and the eastern markets. We do not put our cattle in stables and tie them. We prefer an open shed where they may run in and out at will. I do not care how cold it gets provided the wind and the sleet and the rain are kept from the cattle. If they have a place to shelter themselves the cold will not hurt them or will not interfere with their development. We have a shed of that kind and have boxes out in front of this shed which will hold two lengths of corn. We are going to feed them on shocked corn and not upon ground feed of any kind or shredded fodder. We are going to feed them in the old fashioned way with plenty of shocked corn. We haul this out to these cattle once a day only. We feed each morning. We begin with a small quantity and gradually increase getting them on full feed about the first of February of each year.

In addition to that, if they have had no grass during the early winter season, and especially from the first of February on, they have mixed hay placed before them, we prefer mixed hay to pure clover hay, placed in a rack so they can not waste it but can eat the hay as they desire it. These cattle are carried on through the winter in this way until spring and then put out upon grass again. We have not found it profitable to feed them corn during the grass period especially if we have the three kinds of grass and more especially if it is a dry season and the grass is not too wet. When the first of July comes you should have a steer that will weigh from thirteen to fourteen hundred pounds, and that steer, if he be of the right stock, can go to Chicago and top the market. We have been following this process for several years past and it has been our good fortune to top the market with car load lots, both in Chicago and Pittsburg. That is all I believe I have to say upon the subject. If there are any questions that are easy I will try to answer them. (Applause.)

At the conclusion of Mr. Bradfute's address, President Begg said: We will now devote five or ten minutes to the discussion of this topic or the asking of questions. Please be prompt, as we have a long program this afternoon and wish to utilize every moment of time.

Dr. W. I. Chamberlain, of Summit County: I would like to inquire what was the age of the thirteen or fourteen hundred-pound steer in months?

Mr. Bradfute: It would be about eighteen months old.

Mr. J. P. Hine, of Erie County: It looks now as though the feeders of the corn states would have to look to the ranges for their cattle to feed. We have thought for years past that it did not pay to grow our calves when we could buy them so cheaply from the ranges; and we know that some of the best ranches are producing a class of calves far superior to our state cattle, for the simple reason that we have been mixing our dairy breeds with beef breeds and have been breeding indiscriminately, while they have taken advantage of the situation by breeding beef breeds only and they have bred from nothing but pure bred sires for the past eight or ten years on many of the best and largest ranches of the West. I have in mind in particular one ranch in the Panhandle of Texas, which is the largest I know of. I was talking recently in Chicago with its manager, Mr. George Findley, and he said they had branded thirty-seven thousand calves, every one of which was sired by a pure bred sire, one of the three standard beef breeds, and from dams that are also from the pure bred sires and many of them graded up from their native Texas cattle. Of these same calves, to my knowledge, thirty-six hundred have gone into the feed lots of Ohio, Indiana, Illinois and Iowa, and possibly a few of them in Kansas. There were thirty-six hundred in one lot from two pastures that I know of, and they have gone into these feed lots at prices that make them very profitable to raise them in the South and transport them here. It simply goes to show that it would be profitable for the farmers of Ohio, if they had been breeding stock properly, to fill their feed lots in this way. The prices average about twenty-five dollars per head delivered at the car in Texas. We get all graded calves four, five and six months old at twenty-five dollars. The freight and other expenses brings the cost here to about twenty-seven or twenty-eight dollars in Ohio. I mention this point simply to illustrate the disadvantages we have been under from mixing our breeds of cattle, thus depreciating their dairy value as well as their beef value, while the western cattle growers have been using only such stock as they wanted to breed for the purpose of a beef animal and are in consequence now filling our feed lots with range branded calves. These calves have been grown principally in the way which has been suggested by Mr. Bradfute. They have been bred on the principle which he indicated. They are fed of course only on natural grasses; they run out the year round and when they go into the feed lots they are thrifty and perfectly well, which you cannot say of our own calves. In this way you have a bunch of calves which are just as near alike as so many peas. There is no choice among them. They are all alike. You cannot drive over the country in Ohio and pick up a bunch of calves of fifty or seventy-five that will average with them. Now why can't we grow those calves as well as they? They grow them cheaper perhaps. They are making an enormous profit in growing them. They get more for their calves today than they did for their two-year-old steers a few years ago. Why not have some of these breeds in Ohio?

We are just as well situated to grow beef cattle. We used to be one of the beef producing states. Why have we let this opportunity go?

Mr. John G. Ickis, of Adena: What is the weight of these calves?

Mr. Hine: I do not know the weight of these calves. There was no way of ascertaining their weight at the point of shipment? I presume, however, they would weigh about one hundred pounds per month of age.

Mr. Ickis: What age were they?

Mr. Hine: They were spring calves and were sold during the months of November and December. I know three or four lots here in Ohio.

Dr. W. I. Chamberlain, of Hudson: What is the total number you get on one ranch?

Mr. Hine: Mr. Findley told me they had branded thirty-seven thousand on the X I T Ranch in the Panhandle of Texas. This range is above the quarantine line about two hundred miles. It is owned by a cattle syndicate. I cited that instance because it is the largest ranch I know of, and they were putting out more cattle of the kind I have described than any other that I know of. One man bought thirty-six hundred in one lot. That was a gentleman in Missouri and he placed them by means of advertisements through the feed lots of the corn states.

Mr. Bradfute: I will say that Mr. Findley told me that they had placed I think about four hundred of these calves in Ohio and were expecting to place quite a good many more. It seems strange that a man would go clear to Texas to buy feeders and pay the freight on them and bring them to Ohio at what ought to have been a splendid profit for the Ohio farmer.

Mr. Ickis: What was the weight of these calves?

Mr. Bradfute: I did not see any of these calves but they were sold there at twenty-five dollars a head on board of cars in Texas, and they weighed I presume about five hundred pounds on the average. I know up here good calves six months old, many of them are selling for thirty dollars per head, good, first-class calves of a strictly beef type without any intermixture of the dairy breeds.

Mr. Reuben Rankin, of Fayette County: What breed of calves are these?

Mr. Hine: I am not here to advocate any breed. This particular lot of calves of which I spoke was high grade Herefords. Their ranch is fenced and they control their pastures just as a farmer would. They keep their breeds separate. They had more Herefords than anything else, because at the time they were buying they could buy them cheaper than either Shorthorns or Aberdeen-Angus, and those two pastures from which these thirty-six hundred calves came were high grade Hereford pastures. It was said that one pasture of Aberdeen-Angus in particular was superior — and of course we are all glad to know that —

to the Hereford calves; and also, I may say, that I have seen in a report of Clay, Robinson & Company — live stock report of Chicago — that one bunch of Aberdeen-Angus with the X I T brand on them brought one of the highest, and I think it was the highest price, of any range cattle this season, the highest price of any branded cattle. But these particular calves to which I refer were high grade Herefords.

Mr. Rankin: I asked the question because there were fifty of those calves sent to our county. I have never seen them but they say they are very fine, and they are all Hereford stock. I believe it would be impossible for feeders in some sections to produce sufficient corn to raise the calves that they feed. I am sure it would be impossible in some instances, because I know men who raise corn and only have perhaps one hundred and fifty acres of land who could not raise the calves that they feed from year to year, so they are driven to the necessity of buying their feeding stock from some other locality. And I think a discussion of the question of obtaining these cattle from districts where they can raise them cheaper than here is very pertinent.

President Begg: We are compelled to arrest the discussion of this topic, however interesting it may be, at this time, as we have so much else on the program for the afternoon.

We have with us this afternoon our distinguished fellow citizen, J. H. Brigham, Assistant Secretary of the United States Department of Agriculture, who will address us for a short time upon the subject, "What the Farmer Should Do for Himself." (Applause.)

Col. J. H. Brigham then said:

Mr. President and Gentlemen of the Farmers' Institute: — I am always very glad of course to meet with my co-workers, especially in Ohio. I have done something which is a little unusual for me, and that is to reduce what I have to say to writing. Tomorrow I am on the program to address you on the subject, "What the United States Department of Agriculture is Trying to Do for the Farmer." And it therefore seems well enough at this time to suggest some things which the farmer ought to do for himself.

Col. J. H. Brigham then read the following address:

WHAT THE FARMER SHOULD DO FOR HIMSELF.

No class has contributed more for the comfort, happiness and prosperity of the whole people that the farmers. By their industry and perseverance they have cleared away the forests, drained the swamps, and turned the wilderness of America into a paradise, inhabited by the richest, strongest nation in the world. There is no country where the fruits of honest toil are more generally shared than the United States of America. The annual product of the farms of our country is estimated to be worth three billion and five hundred million dollars—an amount of wealth which no mind can comprehend. We not only clothe and feed our people better than any other people in the world, but we send abroad annually a surplus sufficient to pay whatever balance there may be against us. Every legitimate industry is dependent upon the success of the farmers. Manufacturers, merchants, professional men, transportation companies and the masses of laborers all prosper when the farmers have been successful in their labors, and all suffer when partial failure makes hard times on the farm. The farmer has borne his share and more of the burdens of taxation; he has ever nobly responded to the calls of his country in peace or in war. Whenever storm clouds have gathered and our institutions have been threatened, the country has turned with confidence to the conservative, law-abiding, home-loving farmer, and every draft upon his patriotism has been honored.

Whilst the farmer will continue to contribute to the general welfare, it seems to me that it is very important that he should give some special attention to his own interests. In other words, he must learn to help himself, must adopt business methods upon the farm, must produce what the consumers want and are willing to pay for, must go to extremes in a few lines and neglect others. He must secure equal protection under the law, an equal distribution of the burdens of taxation, a fair share of the honors distributed among our people and a fair share of the wealth produced by his intelligent efforts.

These desirable conditions will not come about by chance. It will require painstaking, persevering effort on the part of the farmer; it will be necessary for him to make available his power for the accomplishment of these ends. In other words, the farmers must learn to get together. They must organize associations for the purpose of devising plans to put forth the results of their deliberation.

It has become such a common thing for interests to unite in some form of organization that it seems hardly necessary to submit arguments showing the importance of organization among the farmers, and yet, very many of them do not seem willing to make use of this agency for the promotion of their own interests.

As a country we have progressed wonderfully until the estimated value of our visible property is more than sixty-five billions of dollars, a goodly portion of which represents the skill and industry of the farmer.

Whether or not he has his fair share of this wealth is an open question. I find that the total value of all property in the United States as given by the census returns was as follows:

In 1850	$7,135,780,228
In 1860	16,159,616,068
In 1870	23,997,221,474
In 1880	43,642,000,000
In 1890	65,037,091,197

This represents the tangible property as nearly as could be ascertained. The total capital invested in farming operations, consisting of land, fences and buildings, implements and machinery and live stock was as follows:

In 1850	$3,967,343,580,	or 55.59 per cent. of the whole.
In 1860	7,980,493,063,	or 49.48 per cent. of the whole.
In 1870	8,885,658,218,	or 37. per cent. of the whole.
In 1880	12,104,001,538,	or 27.73 per cent. of the whole.
In 1890	15,982,267,689,	or 24.54 per cent. of the whole.

This statement shows, not that the capital invested in farm operations has decreased, for it has increased with each decade, but that the amount of capital invested in other lines of industry increases more rapidly than in the farming industry. This is not surprising, as the acreage of farming land is limited, and when it is all brought under cultivation and properly improved, furnished with implements for cultivation and with all the stock that it can profitably carry, capital will necessarily seek other fields of investment where there is more room for expansion.

The foregoing statement does not pretend to give the actual wealth of those who are engaged in the various industries of the country. It only gives the capital invested therein. Much of this capital represents the accumulations of the farmers.

The real estate of this country in 1890 was valued as follows, valuations being "true" ones:

Real estate and improvements	$39,544,544,333
Mines and quarries, including product on hand	1,291,291,579
Railroads and equipments, including street railways	8,685,407,323
Telegraph and telephone lines, shippings and canals	701,755,712
Total	$50,222,998,947

There is a small element of personal property in this total, but to offset this there is some real estate that is omitted because it is impossible to ascertain its value from the census reports. The value of farm real estate is reported to have been thirteen billion two hundred and seventy-nine million two hundred and fifty-two thousand six hundred and forty-nine dollars, which is but twenty-six per cent. of the total real estate value of the nation. The reported value of the real estate of the nation outside of farms in 1890 was thirty-six billion nine hundred and forty-three million seven hundred and forty-six thousand two hundred and ninety-eight dollars, and this is fifty-seven per cent. of the wealth of the country. This real estate outside of farms is very largely situated in cities and towns, where it is gaining in value faster than it is possible for farm lands to gain (land has been sold in New York and London within a few years at the rate of several million dollars per acre), and I assume that it is partly due to this fact that the visible farm property constitutes a diminishing ratio to the wealth of the nation as time advances.

The persistent effort to supply the market with imitation or adulterated food products is a matter of concern to the farmers as well as to the consumers of the country. We are aware of the fact that shoddy and other worthless articles are substituted in the manufacture of so-called woolen goods by which the demand for the product of the sheep is cut down and the consumer is swindled in the purchase of goods that are not what they seem to be. We are also aware of the successful efforts made by wealthy corporations representing large capital to shirk their fair share of the burdens of taxation. In all these matters the farmers are vitally interested and will suffer greatly unless some means can be devised to prevent these frauds. Farmers must unite in demanding effective legislation, state and national, and must send men to Congress and the Legislature who are in sympathy with honest, fair dealing in all these matters. They must also rally to the support of those who are charged with executing the law and sustain them in every contest with those who wilfully violate or disregard the law. If the farmers will not assist in fighting their own battles they need not expect other people to fight for them. Very many of the things of which they complain exist because they have permitted them and because they have been apparently indifferent in the matter of protecting their own interests. If they desire a change for the better, they must bring it about through their own efforts. If the farmers will make available their power and use it wisely for the proper protection of their own interests there is nothing that is right which they may not demand and hope to accomplish. If they will not do so, they should cease complaining because of the inequalities of taxation and other wrongs from which they suffer. Self-help is the one thing needed by the farmers at this time. The additions recently made to our possessions make it all the more important that the farmer should be in a condition to guard well every agricultural interest. It is not now a question of whether expansion is wise. We have already expanded by fortune of war, have placed new and important responsibilities upon our country, and the farmers must bear their share of the responsibilities and act wisely and patriotically in meeting the same, and especially see to it that no harm comes to themselves in settling these important questions.

At the conclusion of Col. Brigham's formal address, he said:

Of course we are all aware of the fact that we are controlling to some extent territory that we did not control a few months ago, and whilst some people are advocating or discussing the question of whether we should expand or not, we have actually expanded. There is not any question in my mind — and I speak for myself alone in giving you my own opinion — but that these islands of the sea will for several years at least be under the control and direction of this government and of our people. What effect and what influence they may exert upon the industries and especially the farm industries of this country is a matter of concern to us. I say in conclusion that I would like to impress it upon the minds of the farmers — because I think they need it perhaps more than any other class in this country — that they must manage in some way to make their power available for the protection of their own interests. I am spending a good deal of time just now at the seat of government and I know something of the power that organized bodies exercise there. Take the great labor interests of this country; they are thoroughly organized and they can almost dictate legislation along many lines, even sometimes when it is not to the interest and advantage of the whole country, apparently at least; whilst it seems hardly possible for the farmers to secure the legislation that is just and fair to all. This situation is no credit to the farmer, with the intelligence and the wealth and the power to do better — to take the best care of the agricultural interests of this country, if we fail to do it, as I have said in my paper, no one is to blame but ourselves. We have no right to complain of others because we do not fight the battles that we ought to fight and win the victories we ought to win. (Applause.)

President Begg: If any one has any question to ask Colonel Brighom or any suggestions to make relative to this subject we will give five minutes for discussion or questions. If not we will pass to the next topic. Please be prompt in availing yourselves of the opportunity if you desire.

The next topic for discussion is "Feeds and Feeding," by John L. Shawver, Bellefontaine, O. I now have the pleasure of introducing to you our fellow citizen and brother farmer Mr. Shawver, who will address you upon this subject.

FEEDS AND FEEDING.

By John L. Shawver, Bellefontaine, O.

Mr. President and Fellow Farmers: — There is perhaps no subject claiming so much attention from progressive farmers today as that of Feeds and Feeding. They already know the importance of clean, warm and convenient barns. They fully appreciate the importance of good blood in the animals they breed. They have satisfied themselves that good care and constant watchfulness on the part of the feeder goes far towards producing the desired results. But of late years the agricultural papers have had much to say about the "nutritive ratio," the "balanced ration," "digestion coefficients," the "composition of feeding stuffs," etc.

These papers contain numerous essays from scientific men telling us of the importance of nitrogenous substances in food; the function of either extract and carbo-hydrates in food assimilation; the amount of digestible protein, carbo-hydrates or fat required to raise the temperature of a kilogram of water one degree Centigrade, etc.

These scientific contributions to our agricultural literature are of great value and have done much to set us to thinking, but inasmuch as comparatively few of our farmers are familiar with the terms used by chemists or their signification, the actual number who derive practical information is by far too small.

That we are considerably at fault in the manner of feeding farm animals is not to be disputed. That we usually make little distinction in the character of the food given to young, growing animals, and to those matured, is a well known fact. That we are disposed to feed to our stock those crops which we can sell on the market to the least advantage, regardless of their nutritive value, or the drain of fertility from our soils, is a sorry compliment to our boasted intelligence. That the tendency to sell the products of the soil in their crude form, as found in corn, oats, hay, straw and fodder, rather than feed them upon the farm and depend upon an income from the sale of finished products in the shape of eggs, butter, cheese, poultry, beef, pork and mutton, is the chief cause of the deterioration of our soils.

It would appear desirable then, not only to grow all the feeding crops we can on our farms, but to keep sufficient stock upon the farm to convert these crops into more finished products, which may be sold at enhanced prices, yet take away but a minimum of fertility.

The farmer who sells good clover hay for three dollars per ton is disposing of seven dollars and fifty cents worth of nitrogen, phosphoric acid and potash, throwing away his labor in harvesting the crop, and at the same time giving away one of the best rough feeds his farm can produce.

While being reluctant about selling feeding crops from the farm, we should also make special efforts to harvest these crops in the best possible condition. Much of the value of a crop is frequently lost through neglect or mismanagement.

The corn crop, upon which Ohio farmers depend so largely for profits, loses much of its value when permitted to become overripe before it is cut and shocked. We lose nearly half the value if we shuck the ears from the standing stalks and depend upon grazing the cattle on the fodder. The fodder decreases rapidly in nutrition, the cattle are exposed to the winds, and the soil is injured by treading and compacting. If the stalks are cut and shocked, but remain in the field some months before the grain is gathered, both grain and stover are usually badly damaged. If the grain is gathered at once and the stover set up in large shocks tied well about the top to exclude rain and snow, the loss is diminished, but is still too great. If both grain and stover are stored away in the barns before being injured by exposure, we retain practically all the feeding value, save perhaps a small loss in the butts of the stalks. On most of our farms the value of these stalks for adding vegetable matter to the soil is greater than the feeding value. The silo is beyond doubt the ideal and the most economical method of handling the corn crop, especially for the dairyman who sells milk or manufactures cheese.

In the production of hay much greater profits may usually be obtained from a crop of clover than from timothy, notwithstanding the market price of the latter invariably runs higher. The reasons are because the nutrients are better balanced in the clover and for this reason better suited to the needs of growing stock. Further, the fertilizing ingredients of the clover are about seventy per cent. greater than in the same weight of timothy. In the next place, the clover roots have prepared a vast amount of vegetable matter in the soil, and stored up a vast amount of nitrogen and mineral matter for the benefit of future crops. In the harvesting of clover we frequently lose much of the value by permitting the hay to lie in the swath too long, exposed to air and sunshine, in which case the leaves and small branches drop off and are lost.

There are three methods of making clover hay, each of which has its peculiar advantages. The first method, and the one most generally adopted, consists in cutting the clover late in the afternoon, and on the following day, as soon as it is fairly cured, it is drawn to the barn. The second method consists of cutting after the dew is off in the morning, tedding two or three times and drawing to the barn the same day. Bright sunshine is essential to the success of this method, and sufficient force must be employed to keep the machinery moving every available hour of the day. The third method is to cut the clover in the forenoon, rake and shock in the afternoon, then permitting the hay to remain in the shocks several days, where the heat generated assists in curing the hay. The shocks are then opened and exposed to the air and sunshine a few hours before drawing to the barn. This method requires favorable weather for several consecutive days, and some extra labor, but it gives a superior quality of hay and is much favored in some localities.

When clover is cut too early in the season it sometimes contains more than ninety per cent. of water and is very difficult to cure. When cut too late the crude fiber becomes too hard and woody, and the hay is largely indigestible, unpalatable and less nutritious. The largest percentage of nutrition is secured when the plants are in full bloom, but the large amount of sap in the plants at that time makes it difficult to cure. The most approved time is when about one-third of the blossoms are turning brown.

The same rules that apply to the harvesting of corn and hay apply also to the harvesting of all other kinds of feeding crops. That is, to secure the greatest amount of nutrition the crop should be harvested before the ripening process has been completed; cured with as little exposure to sunshine as possible, and stored under roof before it is damaged by the elements.

Of course it is economy to provide good stables in which to house the stock. It is expensive to warm a barnyard enclosed by a rail fence, with heat produced with feed. With well lighted stables in winter, warm, free from drafts of wind, free from ill odors, and with salt and water always accessible, we are in position to expect good results from judicious feeding.

It has been estimated that cows in full flow of milk, fed on dry feed and kept in comfortable stables, will drink daily from seventy to one hundred and ten pounds of water. An experiment is reported where cows, accustomed to water twice daily, were placed where they had constant access to water, resulting in an increase of one pound of milk per cow daily. From this it is estimated that a constant supply of water at all times would result in an increased yield of at least two hundred and twenty-five pounds of milk per cow annually.

An experiment with three cows for two weeks without salt resulted in a yield of four hundred and fifty-four pounds of milk. The next two weeks each cow received four ounces of salt daily, resulting in a yield of five hundred and sixty-four pounds, or an increase of one hundred and ten pounds. Many dairymen mix a little salt with the grain at each feeding and in addition keep salt where it is accessible at all times.

Thus far we have said nothing about the properties of food. That various kinds of feeding stuffs differ in the proportion of constituent elements is well understood. That we get better results from feeding a variety than when feeding a single kind is true. That the experienced feeder who knows just how to combine his feeds to produce given results gets better returns for the feed consumed than the one who feeds indiscriminately, is also true.

Permit us now to consider briefly the properties of food. All feeding stuffs contain:

Water: varying in amounts in different materials from six per cent. in granogluten to ninety-four per cent. in whey. The function of water is to make palatable the food and to aid digestion.

Protein: varying from forty-two per cent. in peanut meal to less than one per cent. in wheat chaff and straw, cotton seed hulls, corn silage, potatoes and carrots. The function of protein is to form muscle, brain, tendons, hair, wool, hoof, skin, milk and butter fats.

Carbo-hydrates: varying from sixty-nine per cent. in wheat to four per cent. in buttermilk. The carbo-hydrates are transformed into fat and furnish heat and energy.

Fats: varying from twenty-nine per cent. in flax seed and sunflower seed to nothing in sugar beet pulp. Fat forms fatty tissue and furnishes heat.

Mineral matter: Aids in digestion and formation of bones.

Scientists have laid down for our guidance a number of feeding "standards" adapted to various kinds of stock at different ages and under various conditions. They have also made numerous chemical analyses of feeding materials and combined the average results of their findings in "Feeding Tables." These tables have been published in various books which treat of stock feeding and also in Farmers' Bulletin, No. 22, issued by the United States Department of Agriculture.

By selecting a feeding standard adapted to the stock we desire to feed, and referring to the feeding tables, we may select from the feeds we have on hand such as will meet the requirements of the standard.

As an example we want a ration for a cow weighing a thousand pounds and giving three gallons of milk daily. In the list of standards, we find such a cow should have daily, sufficient food of such varieties as will supply two and one-half pounds of protein, thirteen pounds of carbohydrates, and three-fifths pound of fats, with a fuel value of about thirty-two thousand calories. By consulting the feeding tables we find we can use

	Lbs. protein.	Lbs. carbon.	Lbs. fat.	Calories.
10 lbs. clover hay having	.65	3.53	.16	8,499
15 lbs. corn stover having	.30	5.00	.08	10,164
4 lbs. corn meal having	.28	2.61	.13	5,921
4 lbs. wheat bran having	.48	1.65	.11	4,446
3 lbs. oil cake meal having ...	.85	.97	.21	4,329
Total	2.56	13.76	.69	33,359

In like manner other rations may be found. It will be noticed that very few single feeds have the right proportions. Oats approaches most nearly the requirements of the grain feeds. Clover hay fills the requirements save it is too bulky, but in feeding oats with clover hay, we secure the desired end. Alsike clover pasturage fills the place also, as does red clover alone, or Kentucky bluegrass and timothy combined.

For calves, pigs and lambs, the ration should be more narrow; that is, the percentage of protein should be increased. For dry cows, stock cattle and horses at light work, the ration should be widened. In other words, we are to remember that growing stock of all kinds requires a large percentage of protein. The relative proportion gradually decreasing though the absolute quantity is increasing.

Now, an ounce of experience is sometimes said to be worth a pound of theory. Our experience has demonstrated that these theories of feeding are well founded. When we began farming fourteen years ago it was a difficult matter for us to have our cows yield over one hundred and fifty or two hundred pounds of butter per year, but they have yielded an average of three hundred and eight and one-half pounds in 1896, three hundred and two pounds in 1897, and three hundred and twenty-one pounds in 1898. It is probable that part of the gain is due to better stables, better cows, better care, better apparatus, etc., surely a part of it is due to better feeding, but we shall not be content until we reach six hundred pounds per cow.

When we have learned to grow only ideal stock; when we have learned to give this stock only ideal care; when we have learned to feed in an ideal manner; when we have learned to market in the ideal way; when we have learned to be ideal men, — we shall then be ready to say good bye to earth, and permit the boys to take up the work where we leave off, and improve upon it where they can.

At the conclusion of Mr. Shawver's address Mr. Brown said: Mr. President and gentlemen, it is not necessary with the charts before you, and what Mr. Shawver has said to say a word about that subject. But I wish I had a half hour to talk to you about a new feed stuff. Some of you who read the papers I have written for know what I am going to talk about. It is sorghum as a stock food. I have been experimenting with it for six years. I have learned more — Dr. Chamberlain — since the last article you asked me to write about it, than I ever knew before. I am now prepared to say that it is my profound conviction that I can take a forty-acre farm and grow more food product on it than my neighbor can with a one-hundred acre farm if the Court will grant an injunction that he shall not grow sorghum and I am allowed to grow it.

Dr. W. I. Chamberlain of Summit County: I do not think you could get the Court to grant an injunction on that ground.

Mr. Brown: I do not think that it would be necessary in your case, because I do not believe you think much of it, but I am speaking from careful experiments. The first thing I learned about it was that it will endure any amount of drouth and still make good returns of a crop. I only used it for the first three years as a protection against drouth, during as dry seasons as we have had in recent years, namely, 1893, 1894 and 1895. Then I began to have an idea it would make good hog feed but I did not keep many hogs on my farm. This fall, however, I bought a few hogs on purpose to feed the sorghum, and I have discovered in that way that it was wonderfully good feed for hogs. I supposed if I wanted to keep it as a winter feed I must sow four to six pecks to the acre or eight in some cases in order to cure it so that it would keep. I have found, however, that I can plant the sorghum just as if I were going to make syrup from it and can put it in the barn without any silo and keep it perfectly. It is only since I left home last Saturday morning that I have learned to apply a term to it that I had not thought of before. I went to the barn just before leaving home Saturday morning and went in where there were a few tons of this sorghum stored. It is only a storage barn and the tops I suppose were frozen to some extent but I cut out some pieces of the stalk and brought with me and on examining them I discovered that each joint was in and of itself a perfect silo and a complete silo, hermetically sealed, and it was just as good and sweet as it was the day it went into the barn. I carried it in my pocket until this morning when I opened my silo and it began to have a little sour smell. There is a wonderful thing about it. I do not know how many tons you can grow on an acre but a very large amount. I have learned another thing about it the last year. I first learned that it would endure the drouth and now I have learned that it will endure any amount of wet and rain just as well. My sorghum hay was cut on the eighth day of October and lay for thirty days in the rain, a steady heavy rain for four or five days in succession, and then raining intermittently throughout the thirty days. It was not dry the whole time. I wish you could see it in my barn today. It has not been injured a particle by this rain. As there is but five minutes to devote to a discussion of this matter, I will not have time to say any more about it. But I should like to give you the different steps in which I have followed this matter up. Of course it has not been analyzed but I intend to send some to the State University and have it analyzed. I think we have discovered something that will enable us to grow stock here in this country as we have never dreamed of; and it will enable us to make a food product for one-half the price that we can raise corn. It is my firm conviction that one acre of sorghum grown and fed to the hogs will make better porkers than four of corn grown in the same way, and sorghum can be grown and handled as cheaply as can any other product. I am not saying anything about the seed but my crop this year yielded fifty-five bushels of seed per acre, and the seed alone is worth as much to feed as corn, and an acre of sorghum is worth more than twice as much as an acre of corn.

Mr. Harrison: When do you cut it?

Mr. Brown: There is another wonderful thing about it. It will mature a crop in about ninety days. I never raised a better crop than a crop sown on the 18th day of June and I think if it was sown on the 1st of July it would have been just as good. You can cut it at any time along in August or September, or in October, before frost and even a light frost does not hurt it. The sorghum that I am feeding now laid out for a month on the ground as I said during a very wet and rainy season. The fact is that when I cut it I did not expect to do anything with it, but I got a letter from a brother of mine in Kansas who told me I could cure it; and at the same time I received a bulletin from the Secretary of the Kansas State Board of Agriculture, Mr. Coburn, in which I found the farmers there were in the habit of wintering it out in the shock and feeding it in that way to their hogs in the winter. And that led me to try to utilize this crop. I have grown it for seed but when it had laid so long upon the ground I had not expected to use the stalk part. With sorghum syrup at eighteen cents a gallon I could not make day wages for myself and team to haul it to the mill, and therefore it was left on the ground for a month or six weeks.

Mr. Harrison: Do you find any trouble in getting a stand?

Mr. Brown: No, sir, not in the least. You want to make your ground fine and mellow. Lay it off with a marker. We drop ours with a Matthews garden drill and it is covered with a light harrow.

Mr. Harrison: Did you ever try to feed the seed to cows and poultry?

Mr. Brown: I have never fed the seed but I know it is a good feed.

Mr. Harrison: I would like to ask the last speaker, Mr. Shawver, how long a period of time his friends put on five pounds per day upon his cattle?

Mr. Shawver: Twenty-four hours.

A Delegate: For one day you mean?

Mr. Shawver: One day.

Mr. Harrison: How many consecutive days?

Mr. Shawver: Forty-three days, I believe.

Mr. A. Shirer of Montgomery County: I would like to ask a question also, and I hope some one of these intelligent gentlemen will try to give me a common sense answer. I see that Dr. Chamberlain is laughing at me. He always laughs at me when I have anything that I want to say. I have asked this same question several times and nobody seems to be able to answer it. Suppose one hundred pounds of feed gives a gain of ten pounds in a certain steer. Why is it that that same one hundred pounds will make a gain of fifteen pounds in another steer of the same breed?

President Begg: Can any one answer the gentleman's question?

Mr. M. C. Morris of Butler County: It is purely a matter of assimilation. One animal has a greater power of assimilation than another.

Mr. Shirer: What do you mean by assimilation?

Mr. Morris: I mean the power to transform food into flesh and bone and muscle.

Mr. Shawver: The speaker in the very excellent lecture we had this morning mentioned that very fact. The beef cattle which Brother

Bradfute feeds put it into flesh and the dairy cattle put it into butter; and so you see it is the animal itself that gives a different result.

Mr. Bradfute: Right along the same line that Mr. Shawver just spoke upon I was going to say that it is for the same reason that one beef animal will make a great deal more gain upon the same kind of feed than another beef animal; the same reason it is that one animal when fed a certain amount of feed, or the same amount of feed, will make fourteen pounds of butter a week and another animal will make but six. It is in the ability of the animal to assimilate the food. It is her ability to utilize that food. And so it is with the steer that Mr. Shirer has referred to. It is the individual ability of that animal to use that food to better advantage for himself in building up flesh than the other one which does not show the same amount of gain.

Mr. W. A. Eudaly of Cincinnati: It is said that there are no two men made exactly alike and I am inclined to believe it. And there are no two animals of the same breed that are made exactly alike. That is the sum and substance of the whole matter. If you build two furnaces for using fuel, you will have the same number of brick, the same number of fire walls, and the same number of grate bars, and the two furnaces may be constructed identically alike, but they will not consume the same amount of fuel. You can not make two locomotives to save your life that will use the same amount of fuel and make the same amount of steam, and you can certainly get them much nearer alike than you will be able to find any two animals.

President Begg: The time has expired for the discussion of this topic. I wish to state to the audience before we proceed with the next address that at the conclusion of the discussion with relation to the next subject we will hold an election of officers of the Institute for the ensuing year. I make this announcement so that all will remain who can.

We will now proceed with the last topic upon the program, an address by Mr. T. C. Laylin of Norwalk, O., on a subject that interests us all over Ohio and I now take great pleasure in introducing to you Mr. T. C. Laylin.

Mr. T. C. Laylin of Norwalk, O., then said:

Mr. Chairman, Ladies and Gentlemen: — I have often wondered how I would feel to raise my voice in the halls of legislation, because we are not accustomed to have farmers do this from our section. But when I look around this audience and see five hundred pairs of eyes looking straight at me the tension is altogether too great and in order to relieve that tension upon my mind I will have to tell a story, not because it has anything to do with the subject but merely to relieve the tension. I do not know that there is anything in it but I feel that I must. There were four or five little boys playing and as you know little boys like to brag and they were bragging about what their fathers had. One of them said, "My father has a nice surrey"; another one said, "My father has a cupola upon his barn"; another little chap remarked, "My father has a mortgage upon his farm"; one little fellow could not think of anything that his father had and finally burst out crying, and another little chap told him, "I can tell you what your father has got, he has got the big head." Well, the little boy did not know what that meant so he went in to where his mother was, still crying, and told her that one of the little fellows had said that his father had the big head. The mother of the child consolingly said, "Never mind, sonny; there is nothing in it." (Laughter and applause).

Mr. Laylin then read the following address:

KEEPING UP THE FERTILITY OF THE SOIL.

The subject of soil exhaustion is one that is engaging the attention of our farmers everywhere. The inquiry that we hear at almost every institute is, "How can we keep up the fertility of our farms?" To answer this question satisfactorily would require the wisdom of a Solomon.

To keep up the fertility of our farms a knowledge of the various soils of which they are composed is necessary; we cannot have complete success in our effort without this knowledge. If we find that the yield of crops is decreasing from year to year, this is an evidence that our management is at fault. Sometimes a failure to produce maximum crops may be due to other causes than a lack of the elements of plant food; it may be due to the plant food being made unavailable, from one cause or another, for instance, from surplus moisture. To correct this underdraining becomes a necessity.

Underdraining is one of the means of the improvement of fertility because it assists decomposition of elements of plant food. It enables the plant roots to go deeper in the soil in search of nourishment thereby increasing the store of available food. It makes the land more porous, permitting the air to circulate through the soil, for wherever the water passes through the earth, passages are left in which the air enters. It is also a fact that the soil is less liable to bake in seasons of drought and the land being mellower, it will withstand dry weather better. This increased porosity renders the soil a better non-conductor of heat and cold and the roots of plants are less liable to injury by reason of freezing and thawing. It economizes labor by permitting earlier working in the spring and by allowing the work to proceed without interruption on account of surplus water.

In addition to drainage, manuring, rotation and tillage are operations that are necessary to the preservation and restoration of fertility. While our lands were covered by forests, or a dense growth of weeds and grass in a state of nature, they kept their fertility, and increased it. The luxuriant vegetation grew from year to year taking some of the elements necessary for its growth from the earth, but much also from the air. The leaves of the trees, the twigs and in time the bodies themselves died and fell to the ground, thus returning more to the soil than they originally took from it. We take from nature no worn out lands. Her system of agriculture is very different from that of ours. We remove from the soil the crops we cultivate while nature returns more than she takes. Unless we imitate her by returning at least a part of the product or its equivalent, the soil must in time become barren. "We must feed the land that feeds us" or abide the consequences.

The ordinary rotation of corn, oats, wheat and clover, selling the corn, oats and wheat, returning only the fodder, hay and straw after their consumption by animals, is exhausting, and except upon those soils prodigal of fertility is inadvisable. It may be said that it is impossible for us to ever return enough manure to balance this loss. This is one of the great problems that the American farmer has to solve. The trouble that we are now meeting, the farmers of the eastern states encountered years ago. Crops raised upon western land are produced with less labor and less expense than in Ohio. The virgin fertility of American land, the improved machinery of today, the rapid facilities for transportation, and the ready markets of the world for grain have led the farmers to draw upon the land for those products that most exhaust the soil, and this tide of exhaustion had its beginning in the East, but like the star of Empire, it is rapidly taking its course westward. The time is coming when the western farmer, whose only song has been one of abundance, will reap the effect of such prodigal and destructive farming, but how can it be avoided? How can restoration be made?

1st. By keeping more stock, consuming upon the farm its products, selling its fertility in its most concentrated form and in the least possible amount.

2d. By resorting to the practice of green manuring. We know that nature adds to the fertility of the soil by decaying vegetation. We can imitate her by growing crops for the purpose of plowing under. Although vegetable manures are not so energetic in their action and nature as animal, their effects are more durable. The loss of fertility in the soil is largely due to the lack of humus and plowing under green crops adds this property. The decay of a heavy sod furnishes us an example of this. Clover, where it can be grown, is the best crop for this purpose, although peas, corn, rye, buckwheat, and even oats are used. Living plants contain the same elements as dead ones. If the crops that are grown upon a soil are permitted to return to it its fertility is increased, for in addition to the elements that the plants take from the earth, those that it takes from the atmosphere and the rain are added to the land. The great value of clover lies in the fact that besides drawing nitrogen from the air it reaches down into the subsoil with its long tap roots and appropriates fertility, both organic and inorganic, and decaying, leaves it in the surface soil. All kinds of manure have a mechanical effect upon the soil. Spread upon heavy clay land, plowed in and mixed well, it lightens the soil; decomposing in connection with soil particles, it imparts to it these elements of a gaseous nature. Decaying plants act in the same manner although more slowly. Turning under a heavy crop of forage or long manure just before seeding upon light soils is not to be recommended because it leaves the land in such a loose condition that in seasons of drouth the crops will suffer and unless the manure is thoroughly mixed with the soil the capillarity is destroyed by breaking the connection with the subsoil. For such land the manure should be well rotted and applied upon the surface; although no new principle is added by decomposition it is better fitted for plant food. Manure is wasted by fermentation because the carbon is consumed and the ammonia escapes. Properly regulated and mixed with absorbents to take up the gases there need be no waste. In composting manures the different kinds should be mixed together and the whole kept sufficiently wet to prevent fire fanging.

Commercial fertilizers are powerful agents in the restoration of worn out land; soil so poor that it will not grow paying crops may be so benefited by them that a good crop of clover may be grown and when this is secured we are on the high road to success; but the temptation is strong to rely solely upon their use, and the result is, the land is robbed of the little humus left; their continued use when not in connection with barnyard manures or green crops renders our clay land harder and harder as each year passes. Many of the mineral elements become exhausted, or, in other words, become unavailable. Scientific men have analyzed the different soils and have found that in a foot of clay there are enough of these elements to last for two hundred years; how, then, can they become exhausted? I can account for it upon no other hypothesis than that those elements although there are not available for our use. When we consider that for thousands of years nature worked upon the surface of the rocks with frost, water and air to pulverize and decompose them, getting them ready for plant use, it is very easy to suppose that man, by continually carrying off the crops he grows, exhausts the soil. The ashes of plants consist of these elements, and their application to the soil is beneficial; clover brings these elements up from the subsoil. The consumption of plants by animals uses up the organic parts and returns the inorganic elements to the soil. The pasturing of grass lands adds to its fertility, and especially pasturing with sheep. The fertility of a farm cannot be kept up or increased without rotation.

Although one may not notice any diminution of fertility for a time, yet the stock of humus is constantly becoming smaller and will finally fail if the same crops are grown continuously upon the same ground. This process takes from the soil those elements necessary for the growth of that particular plant, and the slow decomposition by nature cannot replenish them. Given sufficient time, creative agencies would restore lost fertility, but the energy of man cannot wait for nature. "Grain crops are exhausting, grasses and clover are ameliorating." Hence, grain and clover should alternate. And the oftener a clover or grass sod is plowed the more humus is returned to the soil by the decay of the roots. Summer fallowing was in earlier days much practiced and was followed by heavy crops of wheat. This practice did not increase the fertility, but, on the contrary, consumed it, because the continued stirring of the soil helped the sun and air to decompose the elements there. Thus, tillage becomes an agent in the process of unlocking fertility stored in the soil. Other objects of tillage are:

1st. To turn under the grass, plants and weeds, placing the soil so that these may decay and become food for the plants.

2d. To loosen the soil for the purpose of making a proper seed bed and mixing the manures with it.

3d. To cultivate and stir the surface so that young weeds may be destroyed and the atoms of earth may be exposed to the action of the elements in order that we may assist nature in decomposition. Thus tillage enables us to produce better crops though in reality the plant food is in the soil and working the ground simply makes it available, but we cannot depend upon tillage alone. There is no such thing as reclaiming worn out land without manure.

Fertility often depends much upon the underlying subsoil. If this is an infertile, tenacious clay, its admixture with the surface is injurious; in all such cases deep plowing is not desirable. Many farmers are so wedded to the theories learned in their earlier days, that it seems like heresy to talk to them of shallow plowing. The motto of Benjamin Franklin: "Plow deep while sluggards sleep and you shall have corn to sell and keep," has led many astray. Most of the subsoil in my vicinity is of this character, while it may possess some fertility, the close, compact tenacity of its clay being mixed with the surface makes it hard and difficult to work. I have been an advocate of shallow plowing all my life and have had an opportunity of judging of both systems, as some of my neighbors practice deep plowing and I have been unable to see that they raise any larger or better crops than I.

I desire to mention one piece of land that was plowed over thirty years ago with a Michigan subsoil plow to the depth of about a foot which was nearly ruined and continued efforts on the part of its owner to bring it to its former condition have been well nigh fruitless. That there are some soils that will bear such treatment I will admit; yet am of the opinion that the extra amount of labor needed is not duly compensated. One of the objects of the farmer is to get the best possible returns for his labor. An extra amount of labor, unless rewarded by an extra return, is not profitable. The manufacturer of today depends for success under fierce competition on economy of production. So farmers of our time under like competition must depend upon like economy of production.

Another object of the farmer is to get the best possible return for his labor without exhausting the fertility of his soil and to restore fertility when impoverished in the most economical manner and shortest possible time, always remembering that every atom of fertility sold from the farm with every bushel of wheat, corn, oats, or every pound of meat, butter and cheese, does not come back to us from the clouds. Human experience has discovered the gradual loss of something which neither rain nor sunshine can restore; also that the fertility of the soil is increased or diminished in proportion as the crops are returned or removed; that the virgin soil contains humus sufficient for many crops; that each successive crop exhausts the soil; that to maintain the fertility of our farms up to their original standard requires every effort that the wisdom of man can employ.

Let us, then, make a careful study of the wants of our different soils and an earnest effort to maintain, perhaps increase, their original fertility, not for our own advantage only, but for the good of coming generations, remembering that we are in reality but stewards of our farms and have no moral right to draw out and sell all their fertility, thus robbing posterity of its rightful inheritance.

I know no sadder thought than that of the continually diminishing fertility of our farms. Shall we leave to our children a depreciated heritage, entailing upon them a life of drudgery to gain a decent livelihood, when it is entirely unnecessary if we use all the means and knowledge we possess? Sometimes I do not wonder that our boys leave the old farms, seeking "fresh fields and pastures new," where prospects are brighter and rewards are more promising. Again, how depressing to think that the old homestead with all its tender associations and memories may pass, when we are done with it, into the hands of strangers. I firmly believe that it is possible for every farmer to maintain the fertility of his farm, with the assistance of nature, by intelligence, study and practical application of all the means that we have at our hands and at the same time reap rich and abundant harvests.

At the conclusion of the address of Mr. Laylin, President Begg said: We will now devote five or ten minutes to a discussion of this instructive paper. Please be prompt if you desire to express yourselves upon this topic.

Mr. William Markel of Pickaway County: Mr. President, I would just like to say that theory I think is very good, and when practice shows that the theory is correct, it can be relied upon. When practice shows some way that we can increase the fertility of our soil or keep it up, then I think it is good proof that the theory is the correct one. Some years ago we took some land that was originally in one field and the soil was all alike and we divided it by a fence. I took one part of it and a neighbor alongside of me took another part. The field on one side of this fence has been cultivated in a haphazard manner and has not had a regular rotation of crops; while on the field which I cultivated, I followed up a certain system. For eighteen years it has been cultivated in mammoth clover, corn and wheat, year after year. This year the two fields were farmed by the same party. My man farmed both places. The fields were plowed at the same time, plowed with the same plows and cultivated exactly alike. This fall when we husked the corn the field which had been in mammoth clover yielded eighty bushels per acre, while the field right across the fence made fifty bushels per acre, seventy pounds to the bushel.

A Delegate: I would like to ask the speaker how deep he advocates plowing manure under for corn?

Mr. Laylin: Six inches.

Mr. John Larrimer of Fayette County: I think there is no danger of plowing manure under so that the air can not get at it. I have tried plowing six inches deep and the air could get to the manure all the time. I plowed it in the fall and in the spring treated it with manure and the stubble was rotted so that when the harrow went on it put it in nice condition and we raised a good crop of corn and the ground was in a perfect condition for a wheat crop the subsequent year. I think in plowing stubble land, especially in the fall of the year, it can be greatly improved by the use of manure. I have improved the land I speak of so that I raise now twenty-eight bushels of wheat per acre and sixty bushels of corn where formerly I raised sixteen bushels of wheat and forty bushels of corn. The land is old and has been farmed eighty or ninety years and the last crop of corn raised upon it was the best that was ever grown upon it.

Mr. Laylin: I want to say this that it is not all kinds of land that you can treat in the same way. You have probably a light soil. I spoke of a clay soil where it cemented over the top and prevented the air getting in.

Mr. Reynolds of Licking County: I would like to say a word in reference to this subject. There is a field in Licking County where corn, wheat and clover, corn, wheat and clover have been raised — eight crops. It was a poor field in the beginning; it was upland, chestnut soil and freestone under it; it was a very poor field. It raised the crops, every one of them profitably, by the use of high grade fertilizers made by one of the broad guage, gilt edge companies. Its average of wheat was thirty bushels per acre for nine crops of wheat. It lay out in grass for the first year this year and it went two tons and a half of clover hay to the acre. The clover seed that was intended for keeping was tramped under foot by the cattle and there is a mat now on the field. There was not a fork full of anything hauled on that field in the way of manure; simply commercial fertilizers of high grade, from two to four hundred pounds per acre. I own that field myself and the President will substantiate every word I have said. While on the floor I want to say something on another subject. Two-thirds of the fertilizers used in Ohio today are the lowest, cheapest and poorest grades that can be bought, and everything else is as high as the highest. What is the difference in the shape of manure, whether it is manure in a bottle, or in a bag or in a wagon, so that you have those elements of plant food. That is the important thing. If you secure manure or fertilizer that possesses the elements of plant food and if you put it plentifully upon your land, you can continue to farm that land to the end of time. From the field that I referred to, the grasshoppers took the clover seed four consecutive years and they also ate the blades of every stalk of wheat in the field until when we came to thrash it it was as clean of blades as a fishing pole, and yet the average yield on that field for the last number of years has been thirty bushels of wheat per acre. There is a mistaken idea about the use of some of these commercial fertilizers. If you use commercial fertilizers possessing chemicals in the right proportion they will be profitable, but if you use imperfect fertilizers you are simply wasting your money.

President Begg: We will be obliged to arrest the discussion of this question at this time. I want to say that the State School Commissioner, Mr. Bonebrake, has a word to add in regard to the report about which he spoke this morning.

Hon. L. D. Bonebrake:

Gentlemen, when I got down to the office this morning I found that the number of books containing the report of the committee of twelve on rural schools was much smaller than I thought when I was speaking to you this morning, so large has been the demand for them in the last few weeks. When those reports were printed they were distributed through the county boards of examiners all over the state. It is likely that if you will ask your examiners to supply you with copies they will be glad to do so. The distribution was on the basis of about thirty to each examiner. I have it in mind to say one thing more. These reports were printed upon the plates owned by the National Teachers' Association. My predecessor secured through the courtesy of that association the use of those plates. Our state printer printed them and bound them out of state funds. They were then distributed from my office. I believe that I can get hold of those selfsame plates again and I believe further that our state printer, if you would pass a resolution asking him to do it, would be glad once more to re-print that material, and we would be glad also to endeavor to see that each of you got a copy. The expression has been very general today that many of you would like to have copies of the report which was referred to this morning and if you will pass a resolution suggesting your wishes in this regard, I will take the matter before the Governor and see what I can do. I believe I can get them printed and bound and I do not know any place else where our money can be put to better advantage than distributing good matter for the building up of our schools. I am sorry I have not a couple of thousand copies on hand. I would like to have you take home a few copies to your friends, but I have no more. They are all exhausted except an office copy. I thought this explanation was due to you and also perhaps due to myself. If you have any questions to ask about it, I would be glad to answer them before I take my seat.

President Begg: You have heard the suggestion of the honorable gentleman, what is your pleasure concerning it?

Mr. Burns: I move that this body pass a resolution in conformity with the suggestion of the school commissioner. Seconded; carried.

Mr. Bonebrake: It costs our office about eight cents per copy to mail these out. However we will try to get them mailed to you and of course in mailing them we will have to know your names and postoffice addresses. If you will arrange sometime before the adjournment of your institute so that we may have your names and postoffice addresses in a thoroughly legible manner from which we can mail these reports to you, as soon as ready, we will endeavor to compliment each of you with copies of the report.

Mr. Burns: The annual report published by the Secretary of the State Board of Agriculture contains the names of the President and Secretary of each and every institute in the state and these reports might very properly be sent to the president or the secretary of each one of our agricultural societies and also to each of the institutes, and the honorable gentleman can obtain those names from the annual report of the Secretary of the State Board of Agriculture.

President Begg: We are now ready to proceed with the annual election of officers of this State Institute. What is your pleasure?

Mr. O. E. Bradfute of Cedarville: Mr. President, it was the misfortune of the gentleman who was selected a year ago to preside as the president of this organization, to be unable to attend these meetings on account of sickness. I think therefore we ought to re-elect him in order that he may have an opportunity of once presiding over this body. I think this is a courtesy which we owe him. We have had an able and efficient presiding officer in the person of our vice-president and I would like to see the man who was elected last year to preside, be given that opportunity next year. Therefore I place in nomination the name of Mr. George E. Scott as President for the next year.

President Begg: Are there any other nominations? If there are none a motion to elect by acclamation will be in order.

Mr. J. P. Hine of Shinrock: If there are no other nominations, I would move that our secretary, if we have one, and if we have no secretary then I would move that the president be instructed to cast the unanimous vote of this institute for George E. Scott. (Motion seconded and carried unanimously).

President Begg: The motion has carried unanimously and I therefore declare Mr. George E. Scott duly elected President for the ensuing year.

Nominations for vice-president are now in order.

Mr. J. L. Shawver of Logan County: I move that Mr. John Begg be elected vice-president for the ensuing year.

President Begg: I would suggest that you select another man for I have had honors enough for the time being.

Dr. W. I. Chamberlain of Summit County: I second the motion and suggest that Mr. Shawver put the motion to the house inasmuch as our chairman is a very modest man.

Mr. John Begg was then elected unanimously as vice-president of the institute for the ensuing year.

President Begg:

Before concluding this session I want to thank the institute not only for the office conferred just now but I want to thank you also heartily for your courteous manner and close attention given to the speakers during the sessions of this institute. As I sat here and watched the operations of this body of farmers I could not help thinking of the great change that is taking place and has taken place in the way of improvement among the farmers of Ohio. I can not help seeing that the time is past when the farmer will have to take a back seat even in the business affairs of our country. You have observed all the rules of parliamentary tactics in your discussions and in your conduct throughout these meetings, and that of itself is an indication that the farmer is broadening in his knowledge and experience and is learning something else besides that which appertains directly to his business upon the farm and around his own home. I believe this speaks not only well for the farmers but speaks well for the future of agriculture all over our land, not only in Ohio but also in the United States, because the Ohio farmer is, as usual, expected to lead the farmers of the other states in progress.

Again I want to thank you heartily for the courtesies shown to me as your presiding officer, although I was placed in this position by accident, and I hope that my successor or my predecessor, rather, in the providence of God will be able next year to preside over your deliberations.

Mr. Burns: I move that we return a vote of thanks to our presiding officer for the efficient manner in which he has presided over our deliberations.

Seconded and carried with applause.

The State Farmers' Institute for 1899 then adjourned *sine die.*

PROCEEDINGS

OF THE

Thirty-Seventh Annual Session

OF THE

Ohio Wool Growers' Association,

HELD AT

Columbus, Ohio, January 11, 1899.

The meeting of the Ohio Wool Growers' Association, January 11, 1899, in the office of the State Board of Agriculture, Columbus, Ohio, was replete with interest. The attendance was large, showing that the wool growers are very wide awake, and the discussion of questions affecting their particular product is very close to them. The first business, after the report of the secretary was the election of officers. A committee was appointed to make nominations, and the following were reported and elected unanimously:

President, Judge William Lawrence, Bellefontaine; Vice President, John W. Cale, Lore City; Secretary, W. N. Cowden, Quaker City; Treasurer, A. H. Kling, Marion; Executive Committee, W. H. Crawford, Roscoe; C. S. Chapman, Marysville, and W. P. Hedges, Cadiz.

A committee was appointed on resolutions, which reported soon, and their report was adopted unanimously, as follows:

1. *Resolved*, That the Ohio Wool Growers' Association invites the coöperation of all wool growers to ask of the next Congress such improvement of the wool and woolen goods schedule of the tariff law as will equalize the protection given to manufacturers and to wool, and thus give "to wool the most ample protection."

2. *Resolved*, That the association invites coöperation in perfecting a plan of marketing wool by the selection of two or more wool depositories in each principal wool market city to make advances of money on wool, and hold it for sale until the price equals the importing point plus the duty.

3. *Resolved*, That this association favors the organization of a department in the Ohio State University for instruction in textile industries, and we urge the voters of Ohio to oppose the nomination of any candidate for governor, or for senator or representative in the general assembly, who will not aid this purpose.

4. WHEREAS, Certain manufacturers in the eastern states have been urging that S. N. D. North, secretary of the National Association of Wool Manufacturers, should be appointed as superintendent of the census, and

WHEREAS, He was one of the active agents of the manufacturers in procuring the enactment of the Schedule K of the wool tariff so unjust to the wool industry, and his sympathies and influence are by reason of his position adverse to wool growers; therefore,

Resolved, That this association invites the coöperation of all wool growers in opposition to his appointment so manifestly inappropriate.

5. *Resolved*, That this association favors the appointment of Hon. W. N. Cowdon to fill the first vacancy that may occur in the board of trustees of the Ohio State University.

6. *Resolved*, That in the demise of David Harpster, the largest wool grower in Ohio, for several years the president of this association, always influential and efficient in all that could promote the interests of wool growers, this state and the country at large have sustained a great loss. The condolence and sympathy of this association are tendered to the bereaved widow and family of the venerable deceased.

At the evening session, held in the House of Representatives' hall, addresses were delivered by Colonel J. H. Brigham, late Master of the National Grange, and now Assistant Secretary of the United States Department of Agriculture, and by Judge Lawrence.

ADDRESS OF JUDGE LAWRENCE.

GENTLEMEN OF THE OHIO WOOL GROWERS' ASSOCIATION: — We have again assembled to take counsel together as to the needs, rights and duties of the wool growers of Ohio. This, my ninth annual address, will be brief. With adequate tariff protection, this country can supply all its needed wool. The average annual consumption of wool, including domestic product, imports of wool and woolen manufactures, is about six hundred and fifty million pounds on the unwashed basis, or about three hundred million pounds scoured. The domestic product in 1898 was two hundred and sixty seven million seven hundred and twenty thousand six hundred and eighty-four pounds as marketed, in small part washed, mostly unwashed, or about one hundred and eleven million six hundred and sixty-one thousand five hundred and eighty-one pounds, clean, and the residue, three hundred and eighty-three million three hundred and eighty thousand pounds, estimated, unwashed, was supplied by imports of wool and manufactures in the fiscal year 1898 and in part prior thereto. Thus, of this great staple, the American product is less than half the American needs.

THREE GREAT NEEDS.

To give prosperity to wool growers there are three great needs:

1. Such increased protective tariff on wool and other fibres, and on sheep and pelts, as will soon give to American flock owners the whole American market, admitting no imports of wool or woolen manufactures.

2. Such organized plan of marketing wool as will secure to wool growers the full value of their product as measured by the foreign market plus a duty which will secure a fair price.

3. Such increased education in textile industries as will secure wool manufactories to meet the needed increase of domestic wool, and locate them, as nearly as practicable, in states where wool is grown.

This trio of needs is required by statesmanship; by sound political economy; by that "higher law" which says that if any provide not for his own, and especially for the wool growers of Ohio, he hath denied the faith and is worse than an infidel.

BETTER PROTECTION.

The wool tariff of the act of July 24, 1897, as a measure of "full and adequate protection," is a failure, and in practice a fraud. Any tariff that does not secure a fair price for wool is a failure. The present low price of wool proves the utter failure of the Dingley wool tariff. The New York prices for fine unwashed merinos are, per pound:

"Ohio, Pennsylvania and West Virginia, eighteen and nineteen cents; farm value, sixteen cents; Texas, on a scoured basis of forty-five and forty-seven cents, is fifteen and seventeen cents; ranch value, thirteen cents; Kansas, Nebraska, Dakota and Oregon still less; territory, including Idaho, Nevada, Wyoming, Utah, Arizona, New Mexico and Colorado, scoured basis of forty-five cents, is eleven and thirteen cents; ranch value, nine to eleven cents."

Prices for 1898 were lower than 1897; prices of January, 1899, are lower than January, 1898. The prices are lower than in any period in the last forty years, except for a brief time under free wool.

The failure of the wool tariff is shown by the fact that the sheep in the United States in April, 1897, were thirty-six million eight hundred and eighteen thousand six hundred and forty-three; in April, 1898, they were only thirty-seven million six hundred and fifty-six thousand nine hundred and sixty, an increase of only eight hundred and thirty-eight thousand three hundred and seventeen. This small increase is insignificant as compared with our needs. We need one hundred and ten million, but never will have them without better protection.

COTTON PLANTERS — OTHER FARMERS — NOT PROSPEROUS.

The wool growers asked Congress to impose a tariff on imports of cotton — New England objected, and cotton is free. As a result, the price is the lowest on record, and the Boston "Journal of Commerce" says:

"Next season the entire country between the Ouachita and the Mississippi, which since its first settlement has been given up to cotton, and where was grown much of the Orleans or long-staple cotton, now so unfavorably affected by the importation of Egyptian cotton, will be devoted next year to other crops."

As a result the price of all other farm crops will still further be reduced. With the present low prices farmers are not prosperous, and cannot be until we add seventy million sheep to our flocks, and thus increase the demand for pasturage, hay, corn and oats, and thus increase the price. Wool growers invite coöperation of cotton planters to secure ample protection.

What of the future? When the tariff bill was pending New England and other wool manufacturing centers had more than a fair representation, including manufacturers, on the committees of Congress, while there was no wool grower.

The National Association of Wool Manufacturers kept their secretary in Washington skilled in devising phraseology in the tariff bill that would plausibly seem to give an apparent measure of protection for wool, but in practice would be less than half the nominal rates. After the bill became a law — but not before — the secretary said:

"We do not anticipate any change in the steady diminution of sheep east of the Mississippi which has been in progress thirty-five years." — Bulletin National Association Wool Manufacturers, December, 1898, page 374.

Why did not Mr. North tell the committees of Congress that under the Dingley bill sheep husbandry would thus decline? Yes — why? *Suppressio veri, suggestio falsi.*

In my last address I pointed out some of the principal defects in the wool tariff, which I need not repeat. (See Ohio Agricultural Report, 1897.) The wool growers should and will appeal to the next Congress to give what the platform of the successful political party in the last presidential campaign promised, "To wool the most ample protection."

THE HIGH PROTECTION FOR MANUFACTURERS.

The secretary of the Manufacturers' Association has said that the law is "the best for the manufacturers they ever had." It was intended to be so, and to be better for them than for wool growers. When the bill was pending in the House in a form less protective than the bill as it became a law, Hon. Charles H. Grosvenor, of Ohio, a member of the committee that made the bill, in a speech in the House, said:

"If there is one article raised or manufactured or produced in New England that will not receive tariff protection in this bill far above any ad valorem rates of duty on American wool, I do not know what that article is. * * * So, then, it is the plain duty of the wool growers of the West and manufacturers of the East to accept this schedule. * * * The rates of duty in this schedule for the wool grower are not so high, in ad valorem results, as are the duties in the cotton schedule, and in a vast number of the smaller industries."

Will Mr. Grosvenor tell us why wool growers should receive less protection than New England manufacturers? Yes, why? When he left his native New England, and made his home in Ohio, the people of his adopted state had a right to expect he would demand for them as ample protection as for the manufacturers of the East.

At the thirty-fourth annual meeting of the National Association of Wool Manufacturers, held in Boston, January 11, 1898, S. N. D. North, its secretary, made a report in which he gave statistics showing the total foreign value of the imports of woolens of every description for consumption under the present tariff, under the McKinley tariff, and under the Wilson tariff, and said:

"These figures enable us to be sure that foreign goods are no longer a serious element in the market situation except as a few of those eighteen months' old importations may be still unsold."

This shows that the tariff on wool manufactures is not merely "protective"— it is prohibitory. Wool growers are entitled to a protective tariff, that will soon increase our flocks sufficiently to produce all wools needed for American consumption. Why shall not our wool growers have the whole American market as well as wool manufacturers? Yes — why not?

The mighty people will not long tolerate tariff discriminations against wool growers, and in favor of manufacturers.

"Justice crushed to earth shall rise again;
The eternal years of God are hers,
While error, wounded, writhes in pain,
And dies amidst North's worshippers."

There is another important fact which shows still further the enormous protection given to wool manufacturers. The "compensatory duty" is based on the theory that all manufactures are made of new clean wool. As a matter of fact, carpets and clothing goods are to a large extent made in part of shoddy and other adulterants, frequently less than half new pure wool. In such cases the measure of protection given to the manufacturers is doubled.

The Dingley law is made in terms to apparently give only moderate protection to manufacturers, but in practice to give high protection beyond all precedent. I have already shown how. (United States Doc. 17, Fifty-fourth Congress, second session, December, 1896, p. 55.)

Hon. George H. Wallace, whose valuable services to this country as consul general to Melbourne are well known, has shown that the nominally apparent protection on wool is sixty-six and one-fourth per cent, but by reason of the "skirting clause" and other provisions, the actual protection in practice is less than thirty-four per cent. But the average tariff for manufactures is one hundred and twenty-eight per cent. How is that for high? (See Boston "Shepherd's Bulletin of the National Wool Growers' Association," January, 1899. Senate Doc. 36, Fifty-sixth Congress, first session, April, 1897.) The enormity of this protection is made more apparent by reference to the labor cost of woolen goods and of wool. The report of industrial labor statistics of Maine for 1898 shows that the average cost of wool manufactures consists of raw material sixty per cent, wages twenty-four, margin sixteen. If we allow the claim of manufacturers as to the ad valorem protection on wool, the tariff law gives them a protection of more than two hundred and forty-eight per cent on the labor cost. Wool is all of eighty per cent labor cost. If we allow the claim of manufacturers as to the rate of protection on wool, the protection for labor in wool is fifty-three per cent, and sixteen per cent additional for cost of feed for sheep here over cheaper foreign pasturage with no winter feed. But, in fact, as Mr. Wallace shows, the protection to labor is only twenty-seven per cent and eight per cent on feed.

EQUALIZE PROTECTIVE BENEFITS.

Wool growers do not ask any increased burden on consumers. A part of the unnecessary, and to a large extent prohibitive duties should be taken from manufactures and given to wool. This would avert the danger of "combines" among manufacturers, resulting in extortionate prices. A protective tariff must be just, or the cause of protection will soon be a "lost cause."

The tariff on imports of wool manufactures is so high that imports thereof have almost ceased, but the tariff on wool is so low that imports still come. Our wool manufacturers should have the whole American market, but our wool growers should supply all needed wool. Why send gold to foreign countries to buy wool? Why not produce the wool and keep the gold? If we produce all the wool and keep all the gold, our nation will be richer than if we import foreign wool, but lose the gold that pays for it.

A PLAN OF MARKETING WOOL.

Too many of the great industries are organized into either gigantic "trusts" or "combines." These "trusts" and "combines" fix the price of all the products they sell. They crush out all outside minor competition; they fix the price they will pay for all domestic agricultural products, and thus they are fast driving public sentiment into the dangers of communism on one side, and anarchy on the other. "The wise man foreseeth the storm." There never has been and there never can be any trust by which farmers ever did or ever could extort exorbitant prices for any commodity they had to sell.

There have been "combines" of buyers of farm products to fix the prices they would pay, and when they had control of all visible supplies, to fix the price they would demand of consumers. But farmers have derived no benefit from the "corners" thus made, except in the few cases — rare indeed — where they held their products for the better market of the "corner." More than ninety per cent of all farmers cannot wait; their needs are so great that they must sell. These "combines" are not always apparent on the surface, nor in a form to be published in the newspapers.

HOW MANUFACTURERS FIX PRICES OF WOOL.

A few leading wool manufacturers in the narrow circle they occupy in and near New England can readily agree on the price they will pay for wool. They can make it a little less than the foreign price with freight and duty added. The fact is notorious that the average price of wool in our chief eastern wool market cities is and for a year has been about three to five cents per unwashed pound less than the "importing point" — that is, less than the London world's market price of similar wools with freight and duty added.

The secretary of the National Association of Wool Manufacturers denies that any "combine" has fixed prices. (Bulletin, December, 1898, page 377.)

But he is mistaken. If the manufacturers did not fix the price, who did?

He says it is a "lack of demand" for wool. If there is lack of demand for American wool, why is it that similar foreign wools and others supplanting the use of our wools have been regularly imported during the last year? There were imported in the ten months ending October 31, 1898, foreign wools as follows:

	Pounds.	Import Val.
Merino grease	26,671,473	$4,569,192
Merino scoured	9,781	895
Combing grease	993,451	234,720
Third-class grease	60,747,855	5,616,214
Scoured	794	147
Totals	88,423,354	$10,421,168
Shoddy, Mungo, flocks	436,110	86,093

The sixty million seven hundred and forty-seven thousand eight hundred and fifty-five pounds of third class wools are imported so clean that they equal more than one hundred and twenty million of average grease merino, and they are largely used in the manufacture of clothing goods, etc.; first supplanting the use, and second reducing the price of our merino and long wools.

It is said that there was a "recent purchase in Boston of one thousand five hundred bales of Australian wool for export."

The manufacturers could well afford thus to "bear" the foreign price and terrify our wool growers, "killing two birds with one stone."

"Lack of demand?" Why, then, have large purchases of domestic wool been recently made by manufacturers at three cents per pound below the importing point? If wool growers received the full price up to the importing point the wool tariff is still insufficient.

THE REMEDY.

The National Wool Growers' Association during the present year should meet and agree upon two or more wool dealers in each one of the principal wool market cities, to receive all wool and advance money thereon, on condition that no wool shall be sold to manufacturers until it will realize a price equal to the "importing point," plus the duty.

Let wool growers ship to these depositories or sell only to local wool dealers who will do so.

I now invite the attention of wool growers and of local wool dealers to this subject, and if they respond with approval, I will, as president of the National Wool Growers' Association, call a meeting to select the depositories and perfect the arrangements. This contemplates no "trust," no "combine," no exorbitant price.

TEXTILE EDUCATION.

All the great textile manufacturing nations have become so by the aid of textile schools. The recent consular reports show that in Belgium:

"The number of technical, trade, commercial and domestic economy schools subsidized by the Belgium government on December 3, 1897, was four hundred and ten."

Of Saxony, the report says:

"With a population of three million seven hundred and eighty-three thousand and fourteen, the kingdom has one thousand nine hundred and fifty-three of these schools. Besides these, there are thirty-nine higher industrial schools, one hundred and twelve industrial technical schools, eleven agricultural schools, seven schools of all kinds of work for girls, and eighteen technical schools for girls. Saxony's wonderful wealth, her industrial greatness, attest the importance of these schools."

Only a few months since Queen Victoria

"Bestowed the order of knighthood upon Swire Smith, of the Springfield mills, spinners of worsted yarns, in graceful recognition of his long and enthusiastic labors for the promotion of the cause of technical education in England."

The Ohio State University was organized under act of Congress of 1862 with a fund of five hundred and fifty thousand dollars, yielding an annual income of thirty-three thousand dollars, besides an annuity of twenty thousand dollars under the act of 1890. The general assembly of Ohio, of 1896, imposed an annual tax of one-tenth of one mill on the taxable property of the state, yielding an annual revenue to the university of about one hundred and eighty thousand dollars, more than half of which is paid by farmers. The act of 1862 declared its purpose was to organize a "college," not a university, "in order to promote the liberal and practical education of the industrial classes." In the year ending June 30, 1897, the university had nine hundred and fifty-four students, of whom there were only ninety-one in agriculture, in law one hundred and thirty-two, in industrial arts, ceramics and mining only twenty-nine; in pharmacy sixty-two; in studies preparatory to law and journalism, in Latin, Greek, philosophy, three hundred and thirty-seven, and in engineering and architecture, two hundred and seventy-one. Thus the "college" authorized by Congress has departed from its original purpose, and is doing comparatively little — almost nothing — "for the industrial classes."

As instructed by this association, I prepared a memorial to the last general assembly, found in the appendix to the Senate Journal, asking that a department be established in the university for instruction in textile industries, especially to instruct persons in the manufacture of wool. But the general assembly and the university ignored the wishes of this association. I advise that wool growers unite to defeat the nomination of any candidate for Governor or for the Senate or House, who will not aid the movement for a textile department.

POLITICAL POWER OF FARMERS.

The farmers will never command the respect to which they are entitled, and exert their just influence, until they unite to become a political power on all questions having no connection with partisan politics, nor until within partisan lines they also become a political power.

The necessity of textile education is shown by the fact that Ohio is almost without wool manufacturing industries for want of men skilled in superintendency. Its utility is certain because it would soon enlarge our manufacturing industries, build up our cities, give employment to labor, and add at least two cents to the selling price per pound of wool grown in Ohio.

The "powers that be" should direct its education in industrial channels and leave to other institutions the training of students to be lawyers, pharmacists, journalists, etc. The wool growers should have at least one representative on the board of trustees in accord with these purposes. Our naval and military heroes in the recent war for humanity have won immortal honor, but

> "Peace hath her victories
> No less renowned than war."

ANNOUNCEMENT.

Judge Lawrence wishes to announce that he is in receipt of the following communication:

Bryan, Ohio, January 25, 1899.

"Hon. Wm. Lawrence, Bellefontaine, Ohio:

DEAR SIR: — It seems to me that the wool growers and wool dealers should know if possible the cause of the present condition of the wool trade. At last Monday's London sale, crossbreds sold at eleven pence or twenty-two cents, the same price that they are selling for in Boston (Ohio medium unwashed). The statistical position of wool never was stronger, and if the natural law of supply and demand were not subverted, wools should materially advance. I have written to C. H. Grosvenor, M. C., that many business men believe that the National Association of Wool Manufacturers could throw a large amount of light on the situation, if requested to do so by a committee of Congress. The growers and dealers should organize to counteract if possible the great influence of that association. If the manufacturers are to reap all the benefit of protection on wool and woolens, the sooner both are put on the free list, the better. I hope you can or will do something to enlighten the people on this subject.

Yours respectfully,

J. M. WELKER,
Of J. M. Welker & Son, Dealer in Dry Goods and Groceries."

ANNUAL MEETING

OF THE

Ohio Draft and Coach Horse Breeders' Association,

HELD AT THE

Office of the Secretary of the Board of Trade, Wednesday Evening, January 11, 1899.

BREEDING OF STALLIONS BY THE FRENCH GOVERNMENT.

By J. R. McLaughlin, Columbus, O.

The year 1898 saw the beginning of a revival in the horse business. For the first time in many years there were men actually looking about for good stallions, and to their very great surprise, such stallions were not and could not be found in sufficient numbers. For the first time in many years there were others who went to France after Percheron and French Coach stallions, beside ourselves. We had intended to go early, but on account of the war with Spain, postponed our trip from week to week; and finally had to go, and run chances of having our horses captured on the high seas and declared contraband of war. The first of June, however, this danger seemed hardly to exist, for the Spanish boats were on the run, being much more fearful of themselves being captured than active in capturing anything.

The latter part of June I was in France, and although late I was ahead of our competitors. The lot of horses purchased then had not been home long till we knew that we could sell many more than we had, and would have to make another trip.

It was in October when I arrived in France on the third trip within a year, about two weeks before the French Government made their annual purchase of young stallions to replenish the "National Stud," in which the French Government and French people take so much pride.

As you already know most of the stallions that stand for public service in France are owned by the government, and this government has a very marked preference for the breed of French coach horses, having purchased this season one hundred and eighty-one three-year-old stallions — four times as many as of all other breeds combined.

Early in September there was a test of speed in which all three-year-old French coach stallions could enter, and only those that could make the "course" of four thousand meters in ten minutes were catalogued for the "Presentation," which this year occurred in October, and which I will attempt to describe.

"L' Ecole de Dressage," where this presentation took place, was built by the city of Caen, and donated to the government for this purpose. It consists of two-story stone buildings around a very large court. Most of the buildings are stables, but there are two or three dwelling houses for the officers in charge, and one building constructed for the use of the judges on this occasion. The lower floor of this building is divided into two large rooms with large double doors opening between them, and large double doors opening out on the court, so arranged that the judges can stand in the back room and look through both large doors out into the court. This court is so large that the track around close to the buildings is about one-third of a mile. -

The stallions to be presented are brought to the stables here two or three days before the time to show them.

There are five judges, of whom M. De Laney is chief. They conduct themselves with as much dignity, and their commands and decisions receive as much respect, as if they were a court of justice.

They occupy the inner sanctuary and the horse is ridden to the proper place in front of the large door. The judges from their position look at the horse and rider as at a picture in a frame. In a moment they all march out around the horse once, perhaps twice, each judge looking sharp to see if he can detect any fault. The chief judge commands the rider to go on a walk in a straight line, always commanding him to return when he has gone far enough. When he has walked back toward the judges so that he would be obliged to turn "out of a straight line" to avoid running over them (the judges never move), the chief gives the command to "go", and he goes on a fast trot around the court, always passing the judges the second time. As soon as he can stop his horse he rides him back directly in front of the judges, dismounts, takes off his saddle, throws the reins over the horse's head, and hands them to another groom, who takes charge from that time.

At this time the official measurer comes out and finds the height, then the horse is led away and back on a walk and on a trot. Finally the horse is again made to stand in front of the doors in the same position as he first appeared under saddle, and the judges file back into the inner office, and from that position take a final look at him. At this time one of the clerks comes out with the certificate, and makes an inspection to find whether or not the markings on the horse are the same as those describing him in the certificate. When the time is up the call is given for "another." The next horse stands mounted, and ready to step into the place of the preceding one without any delay. The clerks keep a record of the judges' opinions as each horse is shown.

About thirty-five horses were presented in the forenoon and about forty in the afternoon; and this lasted for ten days. They were not delayed on account of the weather. The horses would come out and the judges would inspect them in the same manner no matter how much it might be raining at the time.

After these ten days' work were done about two hundred and twenty-five were called out into the second presentation, and out of this number one hundred and eighty-one were bought.

Is there any other place in the world where a person can stand on one spot and see seven hundred three-year-old stallions presented one after another? Is there any other government that does so much for the horse breeding industry?

It is this custom of selecting the very best young stallions for breeding purposes, and throwing the rest, very much the larger number, into the markets to be driven on the streets, put to work and worn out, that has developed in France a breed of horses, almost all of which are perfect. These seven hundred young stallions were all serviceably sound, and ninety-five out of every hundred were absolutely sound; so that the judges in making their selections were obliged to grade the comparative degrees of excellence of these very extraordinary horses.

Each horse had to make the course of four thousand meters in ten minutes, which is at the rate of a mile in four minutes, so you can see that these colts must show a good rate of speed before they can be presented.

M. De Laney, the chief judge, was overheard to say that they would not buy a horse without the "right kind of action." He said that a man who simply wanted to see a handsome horse standing still should employ an artist to paint him one; that a horseman likes to see a horse in motion, that a horse is serviceable only when he is in motion and therefore action is one of the important features to consider in determining the relative value of horses.

Having been present and having kept a record of my opinion of each one of these seven hundred horses, my conclusion is that the one hundred and eighty-one horses bought by the government were possessed of the excellent qualities of the breed in the highest degree. If there is corruption or improper practice among public officials in France, it cannot be charged against the men who buy stallions for the National Stud.

The French coacher is without a rival. He goes into England, Germany and every other nation; but nowhere does he run across his equal. Those who have inferior stock may be jealous of him, but the judges of horse flesh the world over praise him and acknowledge his supremacy. There is no other breed with such perfect conformation, so free from common faults, so large and handsome, with so much speed and such magnificent high action.

I have attempted to describe to you the manner in which the government selects the best for breeding purposes; but if I should attempt to describe the horses that I saw, words would fail me. Horses that are so nearly perfect cannot be described. To appreciate them one must see them. Ordinarily to see seventy horses a day for ten days one after another, each presented in exactly the same manner, would become monotonous; but on this occasion the spirit, grace and magnificence of each animal renewed the charm, and although fatigued at night, we had been highly entertained all day.

HORSE BREEDING.

By Samuel Taylor, Pleasant Corners, O.

I noticed in some paper that a man wanted to hear just one sermon from the man that could beat the preacher preaching, to witness one day's plowing by the fellow who could beat the farmer plowing; to see the man that knows more than the doctor, practice one day on himself, and to see the man who can beat the editors ten to one getting out a paper, just try it for one week.

Now, my friends, do not think you have before you one who imagines he can beat the breeders breeding, nor one who for an instant thinks he can tell it all to such successful breeders as are gathered here. But you have one who loves the entire race of horses and enjoys talking to every one who loves the horse.

Do not look for me to load you down with a mass of statistics. If it is figures you are after, just write to your congressman and he will send you all the facts and figures from your Uncle Samuel's printing establishment.

As to the class of horses best adapted for the farmer to breed, that is a question no one can answer satisfactorily to all, but in breeding any class and every class be sure and get size as well as other qualifications, for the small horse will not sell well on the market.

My idea would be for each farmer to put the question to himself: "What will be the most profitable horse for me to raise?" Then let him carefully and persistently breed horses in that line, make the horses on his farm of one type and let that type be a high class horse, one that will bring somewhere near the top of the market; one fit to show at the fair. The need of breeding horses that are as nearly as possible of similar conformation, size and color, is shown by the fact that today the hardest things to find are well matched teams, and they are what will bring you the most money. A story was formerly told by President Lincoln of a western blacksmith he once observed hammering away at a red hot piece of iron, with apparently no definite aim nor purpose. To Lincoln's inquiry as to what he was making he replied that "he did not know, he would hammer away for a while and then perhaps he could tell, it might be an ax." "But," said Lincoln, "you have not enough material for an ax." "Well, then," said the smith, "maybe I may make a hatchet." "But," persisted Lincoln, "you have rather too much for a hatchet and besides for that you are not shaping it right." "Well, then," replied the blacksmith, "if I can't make anything else, I'll heat it red hot and make a big fizzle."

Let each breeder of one or more colts apply this story. Breed with a definite aim and unless we have a definite aim no matter how hard or how long we pound away, we are almost sure to end in a fizzle.

To all farmers the horse is a question of great moment. It is a tool in daily use — and I fear sometimes of abuse — upon the place, a friend that, well used, is a profit and a pleasure from colthood to old age, a companion in good or evil times.

Does any practical person believe the horseless age is upon us? I cannot see that it is even near.

A man in the city came home one night and was told by his wife that the grocer had brought his wares in a horseless wagon, and the reply he made was, "That's proper; he has been sending us beeless honey, hogless lard and cowless butter, so he has a right to use a horseless wagon."

Do we go back on pure butter on account of oleomargarine? Is real honey any less valuable because of counterfeits? Or can cotton-seed oil and suets take the place of lard? No more will the heavy, complex, expensive carriages take the place of our horses. Only the rich can enjoy the motor vehicles on account of their cost, and who would long prefer to bump and buzz along the road with an electric or gasoline engine when he could hold the reins over a spanking pair or a first-class road horse? I cannot believe that any one who has the skill to drive a first-class road horse or team will ever remain a permanent machine driver. Right here let me join the ranks of the prophets and declare that the only practical horseless wagon we will see for many, many years, are the ones now in use on plenty of Ohio farms and the motive power is the good, old, plain, everyday mule. As for the bicycles. How many ride them who would not if they could have a horse instead? In fact from the bicycle brigade will come enthusiastic horsemen as age, wealth and experience will give them a clear insight into the real good things of life. Their knowledge and experience of outdoor life will lead them to appreciate a good horse and for health and pleasure they will exchange the steed of steel for the steed of blood, bone, muscle and intelligence.

Riding the bicycle is all right in its place, but when winter and bad weather force the silent steed into the closet or garret, you will find the same old reliable horse hauling his load or spurting along in front of the family rig, or at work in some business vehicle. No, winter is the time you do not have to take a running shoot to dodge the bicycle scorcher, but your eyes are gladdened by the sight of that noble animal, the horse, as he brings warmth, comfort and food to many doors, or hastens his owner on missions of mercy, business or pleasure. The feeling is gaining ground that the breeders who have been staunch and true to the best friend of mankind, the horse; who have let no motor wagon or bicycle scare them off the road; who have kept on breeding, but breeding only the best, will in a short time be attending these meetings and telling of the good times that have come.

The horse business, like every other, has passed through a long and trying ordeal. Many men have given up entirely the business of breeding, as they said they could buy horses cheaper than they could raise them. The blight struck all breeds alike, draft, coach, roadster and race. In the years before and about 1890, the horse business had a boom, prices on many horses went clear out of sight and a service of many a popular stallion cost more than developed horses in general can be bought for now. Booms are not profitable things to any class of business and it proved so in the case of the horse.

A boom is the fever of business, and while during the flush and heat there is an unnatural strength, yet it must by all the laws of nature, be followed by a period of weakness, measured by the height of the fever and the power of constitution to withstand it. When the hard times struck the country and made all the values collapse, it found the horse fever at its very highest point. Prices were inflated far beyond any ability to be sustained even in flush times and when buyers began to buy, then prices went down with a rush, until they reached a point below the cost of production. That period marked the lowest stage of our fever and was the danger time to horse breeders. Now, I hope and believe the horse breeding business has become convalescent and is on the high road to full recovery. Right here I want to quote to you Mr. Bonner's advice about increasing the price of horses. It is terse and to the point. "If you want to raise the price of horses stop breeding them." The country at large has to a great extent followed this advice even those that never heard of it, the fact that they were raising horses at a loss was advice enough for them, and inside of a few years we are seeing the hard, common sense of the proposition.

In general, not enough attention has been paid to the mare; of the two she is an equal, if not the greater factor in determining the value and usefulness of the colt. Often she is mated too young, but far more frequently at an age when her work on earth should be over. "Like produces like," is a good rule to go by. Peculiarity of form and constitution are sure to be inherited and no matter how desirable or even perfect may have been the sire, every good point may be neutralized or even lost by defects in the mare.

All the essential points should be good in both sire and dam and minor defects in either may be met and perhaps got rid of by super-excellence in that particular point in the other. In animals not sound, it requires a particularly shrewd breeder not to so mate his mare that the good points of each are almost lost and the defects of both increased and the resulting product is far inferior to either sire or dam.

In reference to cheap service fee and insuring colts to stand and suck, as the methods the breeder of unsound stallions adopts, should be argument enough to drive every unsound stallion out of breeding. We never can improve our horse breeding successfully until we secure sound stallions of the improved breeds and the best stallions of their respective breeds. Such stallions cost high prices and must command good service fees. In Scotland, France and Belgium, they pay twenty-five dollars to fifty dollars service fees for their stallions, half cash down, balance when mare is known to be in foal, and the Scotch farmer finds he raises the best colts from the best sires at the highest service fees with a luck-penny besides, and our experience from 1890 to 1894 was that cheap service fees and insurance has ruined our horse industry; has driven out the best sires and brought in cheap, worthless and unsound sires that should never again be allowed to breed. Veterinary inspection will drive out the unsound stallions and encourage improvement among the farmers. In the early days, the times of Justin Morgan, Hambletonian and Messenger, most of the practical, first-class breeding was done by the farmers. A large number of the best horses were from mares that did their share of farm work while carrying their foals. Mares were kept for the double purpose of raising foals and carrying on the work on the farm. In course of time this condition changed. Farmers were tempted to sell off their choice brood mares. Gradually the business of raising horses got into the hands of professional breeders, who kept the best mares they could get hold of for the express purpose of breeding. This new arrangement greatly increased the cost of breeding horses. The mares that used to do a large share of the work on the farm came to be kept in idleness. This was a loss in more ways than one, because it is well known that to work a mare moderately and carefully is beneficial both to her and her progeny. This idleness of the brood mares was an additional expense on the horse breeding industry. By the time the stallion service, cost of keeping mares during pregnancy and attendance were added up the colt was confronted with a bill of expense which for some time could hardly be met by the price he would sell for. The worst feature that has resulted from taking the breeding from the hands of the farmers is that inferior mares have been kept on the farm, with the idea that they were good enough for farm purposes. No greater mistake can be made than this. Nothing is too good for the farmer on the farm. And I am happy to see a change in this line. Get the best, raise the best, and by so doing get the best prices. Like everybody else the horse breeders have had a chance to see how cheaply they could produce and place upon the market a first-class article, and although the lesson has been an expensive one, yet in the end it will prove a valuable experience for us all. The markets of today, speaking from my experience as a draft horseman, demands a horse of good size, weighing from one thousand six hundred to two thousand pounds. The conformation must be not only good, but of a very high standard; the color should be as near solid as possible; a star or some white on legs is not objectionable. The education, both double and single, should be thorough: it is folly to send a half-broken horse to the city markets; you will pay (in a lower price) what it costs to bring him up to the requirements of city work. He should have good action, both in front and behind. Any blemishes will detract from his price; the eyes of the city buyer are as sharp as ours, and his quick judgment in finding any and all faults may be relied upon. The proper age seems to be five or six years. If your horse passes muster in all these points then they will ask for the breeding, and if a roadster, they will want plenty of good, strong blood to back up a first-class individual. Now, if you carefully scan these points, they are just what you would ask for if you were the buyer instead of the seller. They want the worth of their money, and they know how to get it. Whether we have a scarcity of high grade horses can best be told by the managers of our great sale markets. Let them tell us what the customers demand, and the horse breeders will put their brains and bluegrass together and meet their demands. Do not make the mistake of trying to force any horse on the market that they do not want. We cannot make them give up their good money unless we send them the stuff they want. It is the other fellow — the buyer — to whom we look for our returns. Now, if we want good returns for our horses let us all breed and educate horses of the individuality and deportment that will sell well in the markets of the great cities, and we will soon have no difficulty in getting rid of all our stock right here at home, for as soon as we have made known that we have horses of such a type the buyers will be after them fast enough. Let us each try to raise the best, but if we do not, we will say a good word for the horse that is so superlatively good that he can beat ours, yet we will keep right on trying to breed the best next time.

We all love the horse and he is worthy of our love. Have only good stock, feed it well, treat it well, educate it well, and in the end it will repay you for your care, skill and kindness.

LAW

Governing Farmers' Institute Societies in Ohio.

Passed April 26, 1890, and Amended April 27, 1896.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio,* That when twenty or more persons, residents of any county in the state, organize themselves into a farmers' institute society, for the purpose of teaching better methods of farming, stock raising, fruit culture and all branches of business connected with the industry of agriculture, and adopt a constitution and by-laws agreeable to rules and regulations furnished by the state board of agriculture; and when such society shall have elected proper officers and performed such other acts as may be required by the rules of the state board of agriculture, such society shall be deemed a body corporate.

SECTION 2. Not to exceed four farmers' institute societies organized under the provisions of this act, shall hold annual meetings under the auspices of the state board of agriculture in any one county in the state, and the state board of agriculture shall have power to determine the number and name the times and places for holding such institute meetings.

SECTION 3. When a society organized under the provisions of this act shall have held an annual farmers' institute meeting in accordance with the rules of the state board of agriculture, the secretary of said board shall issue certificates, one to the president of the farmers' institute society and one to the president of the state board of agriculture, setting forth these facts and, on the presentation of these certificates to the county auditor, he shall each year draw orders on the treasurer of the county as follows: based on the last previous national census, a sum equal to three mills for each inhabitant of the county in favor of the president of the state board of agriculture, and a sum equal to three mills for each inhabitant of the county in favor of the president of the farmers' institute society, where but one society is organized, but in counties where there are more than one farmers' institute society organized under the provisions of this act, and holding meetings under the auspices and by direction of the state board of agriculture, the said three mills for each inhabitant shall be equally apportioned among such societies, and warrants in the proper amounts issued to the respective presidents, and the treasurer of the county shall pay the same from the county fund; provided that in no county shall the total annual sum exceed two hundred and fifty dollars; and provided further, that the payment to any institute society shall not exceed the expense, as per detailed statement, provided in section four of this act.

SECTION 4. With each certificate of the secretary of the state board of agriculture to the county auditor, which certificate shall indicate the number of societies organized in the county and holding meetings by direction of the state board of agriculture, and before the auditor issues his order upon the treasurer, there shall be filed with the auditor a detailed statement of the expenses of the institute for the current year, no part of which shall be for salaries of officers of the institute society; but this provision shall not apply to the order in favor of the president of the state board of agriculture, which board shall issue statement as required in section six of this act.

SECTION 5. At the annual farmers' institute meetings, held under the provisions of this act and under the auspices of the state board of agriculture, the said board shall furnish lecturers or speakers whose compensation and expenses shall be paid by the board.

SECTION 6. At the close of each season's institute work, the state board of agriculture shall publish in pamphlet or book form, such lectures and papers delivered at the several institute meetings, as may seem of general interest and importance to the farmers, stock breeders and horticulturists of the state, copies of which shall be furnished the secretary of each institute society, and the balance issued to be for general distribution; the cost of preparing the matter and the distribution of the pamphlet or book to be paid by the state board of agriculture. Said board shall also publish, in such pamphlet or book, a detailed statement of its receipts under the provisions of this act and the disbursements on account of institute work.

SECTION 7. Said original act, entitled "An act to provide for the organization and support of farmers' institutes," passed April 26, 1890, is hereby repealed and this act shall take effect and be in force from and after its passage.

RULES

Of the Ohio State Board of Agriculture for the Organization and Management of Farmers' Institute Societies, Adopted May 26, 1896.

SECTION 1. Parties who contemplate organizing Farmers' Institute Societies and Farmers' Institute Societies already organized desiring to hold meetings under the auspices of the State Board of Agriculture, in accordance with the act of the General Assembly of Ohio, passed April 26, 1890, and amended April 27, 1896, must first present a petition to the State Board of Agriculture for the same, signed by twenty or more residents of the county, without regard to sex, but all signers must be of legal age. In order that the Board may act intelligently on such petitions, the petitioners should furnish replies to questions propounded by the State Board of Agriculture concerning proposed place of meeting, capacity of hall or building to be occupied, railway facilities, etc. Blank petitions with the questions to be answered will be furnished on application, by the Secretary of the State Board of Agriculture, at Columbus.

SECTION 2. Said petitions should be filed with the Secretary of the State Board of Agriculture not later than the first day of September of any year. Earlier presentation will greatly facilitate the work of the Board in considering applications and assigning dates and speakers. Petitioners will be promptly notified of such action as the State Board of Agriculture may take.

SECTION 3. After the petition for the holding of an institute meeting shall have been granted, the petitioners will proceed to organize, if not already organized, by the election of a president, vice-president, secretary, treasurer and an executive committee of five, of which the president and secretary shall be members ex officio, all to serve for a period of one year or until their successors are duly elected. After the first organization an election of officers shall be held during each annual institute meeting, only members of the society being entitled to vote. Of the officers, not more than two shall be elected who are residents of the same township. The society shall adopt a constitution and by-laws in harmony with the institute law of the State and these rules.

SECTION 4. As soon as an organization is completed it shall be reported to the Secretary of the State Board of Agriculture, with the name of the society, and the names and postoffice addresses of the officers and a copy of the constitution and by-laws.

SECTION 5. The secretary of each institute society shall keep in a substantial book or books a record of all meetings of the society and executive committee, and a roll of the members, with the postoffice address of each; first, the original petitioners for the organization, followed by residents of the county or locality, of legal age, who, by enrolling their names in the secretary's book, become members of the society.

SECTION 6. When a petition has been granted, and the society notified of the date assigned for its institute meeting and the lectures to be furnished by the State Board of Agriculture, the executive committee shall proceed in due time to make arrangements for the institute meeting, by engaging hall, selecting the local talent desired, arranging for music and all other details necessary for the successful holding of a farmers' institute meeting, and preparing a program which shall occupy the time assigned for the meeting. In arranging the program, time shall be allowed for discussion of the topics presented and for miscellaneous questions. The speakers sent by the State Board of Agriculture are to occupy not more than half the time of the institute meeting, and local talent, discussions and music the remaining time. The program should be published for general distribution at least two weeks in advance of the institute meeting, and at the same time a copy mailed to the Secretary of the State Board of Agriculture and to each speaker who is to take part. Societies should thoroughly advertise and use diligence and enterprise to create an interest among the people and to secure the largest possible attendance. Every citizen of the county and locality ought to be informed as to the time, place and nature of the institute meeting. The executive committee shall have full authority to audit and settle all accounts made for and in behalf of the institute society.

SECTION 7. All institute societies organized under the institute law of the State shall be strictly non-partisan and non-sectarian in every phase of their work, and no institute shall be conducted in the interest of any party, sect or society, but for the equal good of all citizens and farming communities.

SECTION 8. The presiding officers of the various institute societies of the State, holding meetings under the auspices of the State Board of Agriculture, should always and under all circumstances prohibit discussions of subjects other than those pertaining to agriculture, horticulture, stock breeding, etc.; anything of a sectarian or partisan character should not be discussed or commented upon either by speakers or members of institute societies; no criticisms of state, county or township officials should be tolerated under any circumstances.

SECTION 9. No fee shall be charged for admission to institute meetings held under the auspices of the State Board of Agriculture; they shall be public and free to all, the object being to impart agricultural knowledge and experience free to all persons sufficiently interested to attend. If any society desires to hold quarterly, monthly or weekly meetings during the year, the expense of the same may be met by admission fees, subscriptions, collections or sale of season tickets. Nothing in this section shall prevent voluntary contributions or subscriptions for securing speakers desired other than those sent by the State Board of Agriculture.

SECTION 10. Within ten days after the close of each institute meeting, the secretary shall make a report to the Secretary of the State Board of Agriculture, blanks for which will be furnished. On receipt of such report by the Secretary of the State Board of Agriculture he will issue the certificate, according to law, which will enable the society to draw the amount due from the county.

SECTION 11. A society or its executive committee may, on the call of the president, hold such business meetings as may be necessary to transact the business of the society and arrange for the annual institute meeting to be held under the auspices of the State Board of Agriculture; and the traveling expenses of the executive committee for such meetings may be paid as other items and charged with other expenses of the institute.

SECTION 12. When the secretary of a farmers' institute society shall send a written report to the Secretary of the State Board of Agriculture, as provided by Section 10 of these rules, he shall state the cost of the institute meeting, (not including expense of speakers sent by the State Board of Agriculture,) number in attendance during the institute meeting, speakers who filled appointments, speakers absent, whether speakers were acceptable or otherwise, and report any feature or matter of special interest.

SECTION 13. The State Board of Agriculture requires that lecturers employed by the Board shall devote their time and efforts to the discussion of such subjects as are clearly provided for by the institute law of the State, namely, "Farming, stock raising, fruit culture and all branches of business connected with the industry of agriculture."

A BRIEF HISTORY

OF

The State Board of Agriculture
The State Fair
District and Agricultural Societies
and Farmers' Institutes

IN

OHIO

A BRIEF HISTORY

OF THE

STATE BOARD OF AGRICULTURE, THE STATE FAIR, DISTRICT AGRICULTURAL SOCIETIES, AND COUNTY AGRICULTURAL SOCIETIES OF THE STATE OF OHIO.

It has been deemed advisable by this Department to collate the laws and all other information obtainable bearing on the establishment of The Ohio State Board of Agriculture and its work, the State Fair, the District Agricultural Societies established by the Board and the date of organization of the various County Agricultural Societies under the state law, in order that the same may be incorporated in the Annual Agricultural Report for 1898 and thus be made a matter of official record. The early history of some of these County Agricultural Societies has been included herein, and this has been done in every case where any data in regard to the existence of such societies could be found.

While much of this information is already on the records of this Department, it is so scattered as to be almost unavailable, and to correct this difficulty we have arranged it here in compact form and have added to it all that could be gleaned from other sources. Great care has been taken to give authorities, which it is believed will greatly increase the value of the record.

The first law in Ohio in relation to County Agricultural Societies was enacted February 25, 1833, when the General Assembly passed an act entitled, "An act to authorize and encourage the establishment of agricultural societies in the several counties of the State." The law made it the duty of the county commissioners to give notice in a newspaper or by poster of a meeting to be held at the court house on the last Friday of June, for the purpose of organizing an agricultural society. If twenty or more persons answered the call, they could organize by electing, by ballot, a president, vice-president, treasurer, recording secretary, corresponding secretary and ten directors, who should constitute the County Agricultural Society.

No member of any agricultural society was required to pay "a greater sum than five dollars for the benefit of the society in any one year," and the amount so received was to be expended in the interest of agriculture, horticulture, etc.

The county commissioners were authorized under this law to pay out of the county funds, "for the benefit of any such society, a sum not exceeding fifty dollars in any one year." It was made the duty of the society to hold, annually, a meeting the third Saturday in November, for the purpose of making a report on "the state of the society, its effect on the agricultural interests of the county, the probable quantity of the staple commodities of the county and prices current thereof, and such other information in relation to the agricultural interests of the state as they may deem worthy of general notice," and such report was to be "transmitted to the chairman of the committee on agriculture in either branch of the Legislature." (O. L. Vol. 31, p. 28.)

The law was amended March 12, 1839, and county commissioners were authorized to appropriate one hundred dollars annually, instead of fifty, to County Agricultural Societies. (O. L. Vol 37, p. 50.)

The law of 1839 soon proved inadequate to the wants of the agricultural community, so on February 2, 1845, "A Bill for the Encouragement of Agriculture," was introduced into the Senate by Mr. Wetmore (representing Portage and Summit counties). Final action was not secured on the bill until March 10, near the close of the session (the Legislature adjourned March 13), when it was indefinitely postponed by a vote of twelve to thirteen. (Senate Journal 1845, pp. 406-850-851.) This was a very serious disappointment to the friends of the bill, and as a result a State Agricultural Convention was called, to meet in the Senate Chamber, Columbus, June 25-26 of that year. The Convention was well attended by representative agriculturists from all parts of the State, and some stirring resolutions were passed, among them the following:

"*Resolved*, That the next General Assembly be requested to enact a law providing for the election by delegates from the different county or district societies, of a permanent State Board of Agriculture, to consist of seven members, residing in different parts of the State, who shall have the general supervision of all plans for the promotion of agriculture throughout the State, give instructions for the management of county or district agricultural societies, and obtain reports from the same, procure analyses of soils, lectures, etc., and generally perform such acts as may tend to promote improvements in agriculture, horticulture and domestic industry, also make an annual report to the legislature, embracing an account of their own proceedings, together with an abstract of the reports from the county societies.

"*Resolved*, That a State Board of Agriculture consisting of nine members be elected by this convention, who shall discharge the duties of said board, as contemplated in the preceding resolution for one year, or until their successors be appointed.

"*Resolved*, That a committee of ten be appointed by the chair to nominate to the convention suitable persons to constitute said board."

A committee was thereupon appointed and the following gentlemen were named and duly elected as a "State Board of Agriculture:"

"M. L. Sullivant, Samuel Medary, Franklin; Allen Trimble, Highland; Greenbury Keen, Portage; Samuel Spangler, Fairfield; Darius Lapham, Hamilton; Dr. J. P. Kirtland, Cuyahoga; J. H. Hallock, Jefferson; Joseph Vance, Champaign. The convention adjourned to meet again at the call of the 'State Board of Agriculture.'" (Ohio Cultivator, 1845, pp. 98-100.)

On the 22d of October, 1845, in response to a call issued "By the advice of Messrs. Ridgeway, Medary and Sullivant," there was a meeting of the "Ohio State Board of Agriculture," at which it was decided to prepare memorials, petitions, etc., for presentation to the next General Assembly. The "Board" adjourned until December 10th, on which date the committees on agriculture of the two branches of the Legislature were present, "and a full and free interchange of opinions was had in regard to the several plans for the promotion of agriculture contemplated in the resolutions and memorial of the State Convention and the petitions daily coming in from different parts of the State asking for legislative action in behalf of agriculture." (Ohio Cultivator, 1845, pp. 153, 189.) On December 15, 1845, Mr. Wetmore again presented to the Senate "A Bill for the Encouragement of Agriculture," which, with some changes, was passed February 27, 1846, and the act of 1839 to authorize and encourage the establishment of agricultural societies in the State, was repealed thereby, except as to the payment of liabilities incurred.

This law created The State Board of Agriculture, consisting of fifty-three members. Its provisions in relation to county societies were very similar to the provisions of the law now in force, requiring reports to be made to The State Board of Agriculture, the holding of an annual state meeting, etc.

Section 4 of this act provided, "That Michael L. Sullivant and Samuel Medary, of Franklin county; Allen Trimble, of Highland; Samuel Spangler and John Chaney, of Fairfield; Darius Lapham, of Hamilton; John B. Bayless, of Jefferson; Greenbury Keen, of Portage; Simon Perkins, of Summit; John J. Vanmeter, of Pike; Arthur Watts and Felix Renick, of Ross; Elias Florence and William Gill, of Pickaway; Jared P. Kirtland, of Cuyahoga; David Gregory, of Delaware; John McEldery, of Tuscarawas; Isaac Moore, of Lake; John Fuller, of Erie; George W. Gibbons, of Muskingum, Horatio Gillett, of Lawrence; Ansen Howard, of Champaign; John Eckels, of Hancock; Liba Lindley, Jr., of Athens; Henry C. Brish, of Seneca; Samuel Myers, of Crawford; David Stevens, of Richland; John Martin, of Columbiana; Gilman C. Mudgett, of Paulding; L. C. Goble, of Putnam; Isaac Neiswanger, of Belmont; Aaron Johnson, of Perry; William McFadden, of Harrison; Frederick Bonner, of Greene; Jacob T. Pugsley, of Fayette; George W. Cowden, of Trumbull; Billious Kirtland, of Mahoning; Richard Warner, of Medina; John M. Millikin, and Absalom Dunn, of Butler; John Johnston, of Miami; Jesse Wilson, of Shelby;

Abraham Studdebaker, of Darke; Joseph Burns, of Coshocton; James L. Reynolds, of Stark; Newton Larsh, of Preble; A. E. Strickle, of Clinton; Benjamin Ruggles, of Belmont; Henry Protzman, of Montgomery; William R. Putnam, Jr., of Washington; James Louden, of Brown; Dowty Utter, of Clermont; and Beatty McFarland, of Jefferson county, be and they are hereby created a body corporate, with pereptual succession * * * * under the name and style of The Ohio State Board of Agriculture."

Section 5 of the same act provided that the gentlemen above named should "determine by lot, the time that each member shall serve, so that the term of service of one-half the members shall expire annually."

Section 6 provided that "There shall be held in the city of Columbus on the first Wednesday after the first Monday in December, an annual meeting of The Ohio State Board of Agriculture, together with the president of each county agricultural society, etc." (O. L., Vol 44, pp. 70, 71, 72, 73.)

The State Board of Agriculture, created by the above named act, held its first meeting in the city of Columbus on the first Wednesday in April, 1846, in compliance with the provisions of the law. Out of the fifty-three members, but nine were present, while ten were required to make a quorum. We do not find the fact recorded, but according to tradition, a messenger was sent after Mr. Chaney, the member whose home was nearest Columbus, and by hard riding during a part of a very stormy night, Mr. Chaney reached this city before midnight, and a legal organization of the Board was thus secured. The Board met Thursday morning, April 2, and organized by the election of officers, ex-Governor Allen Trimble being elected President, Samuel Medary Secretary, and M. L. Sullivant Treasurer.

The first annual meeting of The State Board of Agriculture was held in Columbus, Wednesday, December 9, 1846. The roll was called by the Secretary and the following members of the Board answered to their names:

Allen Trimble, Samuel Medary, Darius Lapham, A. E. Strickle, Samuel Meyers, H. N. Gillett, Isaac Moore and Arthur Watts.

Credentials were presented by the following gentlemen as presidents or delegates of county societies:

Alexander Waddle, of Clark and Madison; A. Ruff, Greene; T. B. Fisher, Delaware; N. Spindler, Knox; W. I. Thomas, Miami; Samuel Myers, Columbiana; J. F. Beaver, Trumbull; Jonathan Smith, Licking; A. H. Lewis, Portage; J. J. Coombs, Gallia; William Hogue, Belmont. As the delegates from the various county societies were ex-officio members of the Board at this meeting, there was a quorum present and the regular business was taken up.

At this meeting a resolution was passed requesting the General Assembly to reduce the number of members of the Board, and on February 8, 1847, the law was amended and the number of members reduced to ten; the following gentlemen were appointed:

Allen Trimble, M. L. Sullivant, Samuel Medary, Darius Lapham, A. E. Strickle, Arthur Watts, M. B. Bateham, John Codding, Jared P. Kirtland and Isaac Moore.

Section 3 of the amended law provided "That the sum of two hundred dollars be and the same is hereby appropriated from the treasury for the use of the Board." (O. L., Vol. 45, p. 49.)

The annual meetings of the Board were held in December until 1862, when the time was changed to January, in compliance with the amended law of February 20, 1861.

In 1880 the system of monthly crop reporting by townships was inaugurated by the Board, and it took up the work of holding farmers' institutes the same year.

In 1881 (March 16) a law was passed making the Secretary of the State Board of Agriculture the Inspector of commercial fertilizers in the State.

On January 13, 1898, Section 5 of the act entitled "An act for the Encouragement of Agriculture," (R. S. 3692) was amended. This amendment provides for the election of two members of the State Board of Agriculture (instead of five) each year, and makes the term of service five years (instead of two). It required two years to make the change, but in 1900 the new law will be in perfect operation.

THE STATE FAIR.

At the annual meeting of the Board, December 6, 1848, it was resolved to hold a State Agricultural Fair in September, 1849, at Cincinnati, but owing to an outbreak of cholera in that city during the summer, it was decided to postpone it for a year. Arrangements were made to hold it September 11-12-13, 1850, but another epidemic of cholera caused a postponement until October 5-6-7, of that year, when the first Ohio State Fair was held at Camp Washington, near Cincinnati. The receipts were $8,036.18. The fair was "moveable" for some years. Fairs were held in Columbus in 1851; Cleveland, 1852; Dayton, 1853; Newark, 1854; Columbus, 1855; Cleveland, 1856; Cincinnati, 1857; Sandusky, 1858; Zanesville, 1859; Dayton, 1860-1861; Cleveland, 1862-1863; Columbus, 1864-1865; Dayton, 1866-1867; Toledo, 1868-1869; Springfield, 1870-1871; Mansfield, 1872-1873. In 1874 the State Fair was located in Columbus, occupying the grounds of the Franklin County Agricultural Society until 1886, when it was permanently located on its own beautiful grounds, just north of the city. The Board has held fairs annually since 1850, except in 1888, when the "Ohio Centennial Commission" was authorized to and did hold its Exposition on the state fair grounds.

DISTRICT AGRICULTURAL SOCIETIES.

At the first annual meeting of The State Board of Agriculture, December 9, 1846, the following resolution was adopted:

"Resolved, That on application of a majority of the members residing within the districts named below, The Ohio State Board of Agriculture will hold one meeting during the ensuing year in each of said districts, at such time and place as the President may designate; and that it be recommended to the members of agricultural societies, and others, to get up by subscription an agricultural exhibition, at the time and place of these meetings:

First District—Counties of Hamilton, Butler, Preble, Montgomery, Warren, Clermont, Greene, Clinton, Brown, Adams, Highland, Fayette, Pickaway, Ross, Pike, Scioto, Clark, Madison, Franklin.

Second District—Counties of Lawrence, Gallia, Jackson, Hocking, Fairfield, Licking, Muskingum, Perry, Athens, Meigs, Washington, Guernsey, Belmont, Monroe, Knox, Coshocton, Tuscarawas, Harrison, Jefferson.

Third District—Counties of Richland, Huron, Erie, Lorain, Medina, Wayne, Holmes, Stark, Summit, Cuyahoga, Lake, Geauga, Portage, Carroll, Columbiana, Trumbull, Ashland, Mahoning.

Fourth District—Counties of Delaware, Union, Logan, Shelby, Marion, Allen, Hardin, Crawford, Seneca, Hancock, Putnam, Henry, Van Wert, Paulding, Wood, Sandusky, Wyandot, Ottawa, Lucas, Williams, Darke, Miami, Champaign." (Agricultural Report, 1846, p. 20.)

At the first meeting of the State Board of Agriculture the following year, August 5, 1847, it was decided that a district agricultural fair should be held at Wilmington, Clinton county, on the 20th of October following. The President, Hon. Allen Trimble, in his report of work for that year, says:

"Late in the season notice was given for holding a fair in the southwest district, at Wilmington. Although the time for preparation was so limited, the exhibition of implements of husbandry, farm products, and particularly of fine stock, was such as to excite the suprise and admiration of those present, and was highly creditable to the farmers and mechanics of the district."

The following year the southwestern district again complied with the regulations of the Board, and a very successful fair was held at Xenia, September 20-21, 1848.

COUNTY AGRICULTURAL SOCIETIES.

After a careful examination of all records available, the information here given in regard to organization, etc., of the various county societies, is believed to be correct.

Adams. The Adams County Agricultural Society was organized December 13, 1851. The first fair was held at West Union, October 14-15, 1852, and the Secretary reports that "The interest manifested at this fair in the formation of an agricultural society in this county, as shown by the great number of persons in attendance, the quantity, quality and variety of stock, products and manufactured articles exhibited, is very cheering, far exceeding the expectations of the most ardent friends of the project." (Agricultural Report, 1852, p. 130.)

Allen. The Allen County Agricultural Society was organized Jan. 11, 1851, and a fair was held at Lima, October 21, the same year. (Agricultural Report 1851, p. 217.)

Ashland. The Ashland County Agricultural Society was organized October 29, 1850, and the first fair was held at Haysville, the first Friday in October, 1851. (Agricultural Report, 1850, p. 77.) The Society was disbanded a number of years ago, but a record of the date cannot be found.

Ashtabula. The Ashtabula County Agricultural Society was organized January 16, 1823, at a meeting held at the court house at Ashtabula. The first cattle show and fair was held in Austinburg the following October, at which premiums amounting to forty dollars ($40) were offered. (History of Ashtabula county, pp. 41-42.) At a meeting of the officers of the Ashtabula County Agricultural Society, held during the summer of 1846, it was decided to disband the old organization, and they resolved to assign "all the rights, avails, goods, chattels, moneys and effects, with the books and papers of this Society, to any agricultural society that may hereafter be organized in this county under the law." (Ohio Cultivator, 1846, p. 105.) Whether this was the original organization or not, we have no means of knowing. A Society was organized under the law September 12, 1846, and a fair was held at Jefferson, October 14 of the same year. (Agricultural Report, 1846, p. 24, and Ohio Cultivator, 1846, p. 145.)

Athens. The Athens County Agricultural Society was organized in 1828, and the preamble to the constitution is as follows:

"We, whose names are annexed, convinced of the benefits resulting to communities from the operations of well regulated agricultural societies, in the means and facilities afforded by them for the attainment and diffusion of useful, practical information, and the spirit of emulation and improvement in the culture of the soil, and the domestic manufacture of its products, do form ourselves into an Association for the above mentioned purposes, to be called the Athens County Agricultural Society." The first fair was held at Athens in October of the same year. (History of Athens County, p. 183.) A County Agricultural Society was organized under the law April 26, 1848 (Agricultural Report, 1848, p. 30, and Ohio Cultivator, 1848, p. 73), reorganized January 10, 1851 (Agricultural Report, 1850, p. 85), and a fair was held at Athens, October 14-15, 1851. (Western Agriculturalist, 1851, p. 338.)

Auglaize. The Auglaize County Agricultural Society was organized May 24, 1852 (Agricultural Report, 1852, p. 148), and a fair was held at Wapakoneta, October 26, 1853. (Ohio Cultivator, 1853, p. 299).

Belmont. The Belmont County Agricultural Society was organized in 1838 and continued in existence for a number of years. (History of Belmont and Jefferson Counties, p. 185.) The Society was organized under the state law April 2, 1849, and held a fair at St. Clairsville, October 30 of the same year, which, although the weather was disagreeable, was a very great success. (Agricultural Report, 1849, p. 56, and Ohio Cultivator, 1849, p. 313.)

Brown. The Brown County Agricultural Society was organized January 17, 1850, and the first fair was held at Russellville, October 16 of same year. (Agricultural Report, 1850, p. 97.)

Butler. The Butler County Agricultural Society was organized in the spring of 1851, and the first fair was held at Hamilton, October 2-3 of the same year. (Agricultural Report,, 1851, p. 245.)

Carroll. The Carroll County Agricultural Society was organized January 26, 1850, and the first fair was held at Carrollton, October 30-31 of the same year. (Agricultural Report, 1850, p. 115.)

Champaign. The Champaign County Agricultural Society was organized early in December, 1849 (Agricultural Report, 1849, p. 64), and the first fair was held at Urbana, October 3-4, 1850. (Ohio Cultivator, 1850, p. 340.) The following paragraph would indicate that an agricultural society had existed in this county previous to 1849:

"After an interval of about eight years our county has revived its agricultural society." (Agricultural Report, 1850, p 118.)

Clark. The South Charleston, Clark county, Agricultural Society published a notice that it would hold its *eighth* annual exhibition and fair at South Charleston, October 9-10, 1845 (Ohio Cultivator; 1845, p. 133), it must therefore have been organized about 1837. The Clark and Madison District Agricultural Society was organized June 6, 1846, and a fair was held at Springfield, September 15-16 of same year. (Agricultural Report, 1846, p. 27.) The Clark County Agricultural Society again became a separate organization February 12, 1853, and held a fair at Springfield, October 6-7 of the same year. (Agricultural Report, 1853, p. 94.)

Clermont. The Franklin Agricultural and Horticultural Society was organized in 1845 (Agricultural Report, 1846, p. 29), and held its first fair at the Franklin school house in Monroe township, November 7, 1846. (Ohio Cultivator, 1846, p. 178). The Clermont County Agricultural Society was organized June 9, 1849, and a fair was held at Batavia, September 28 of the same year. (Agricultural Report, 1849, p. 68, and Ohio Cultivator, 1849, pp. 202, 313.)

Clinton. The Clinton County Agricultural Society was organized in 1833 (House Journal, 1834, p. 622), and a fair was held in October of the same year, at Wilmington. (History of Clinton County, p. 322.) The Society was organized under the law in 1848, and held a fair at Wilmington, October 17-18, 1849. (Agricultural Report, 1849, p. 70.) The organization was disbanded in 1893.

Columbiana. The Columbiana County Agricultural Society was organized April 16, 1846, and a fair was held at New Lisbon, October 14 of the same year. (Agricultural Report, 1846, p. 39.)

Coshocton. The Coshocton County Agricultural Society was organized in 1851, and a fair was held at Coshocton, October 28 of the same year. (Agricultural Report, 1851, p. 265, and Ohio Cultivator, 1851, p. 356.)

Crawford. The Crawford County Agricultural Society was organized December 5, 1846. (Agricultural Report, 1846, p. 33.) "The first fair was held at Bucyrus in the old court house yard, October 19, 1848. The exhibition was confined to some 19 entries, all of which received awards. Of course, there was no such thing as a fee for admittance. Indeed, the fence was so dilapidated that it had to be patched up to keep the sow and pigs, which were among the attractions of the exhibition, from getting away." (History of Crawford County, p. 292.)

Cuyahoga. The Cuyahoga County Agricultural Society was organized as early as 1841, as there was a cattle show and fair held at Cleveland, October 20-21-22, 1841, and we note that "For this exhibition it was resolved that twelve and a half cents be charged as an admission fee to the exhibition room to all male persons not members of the Society," and that "There was a very handsome exhibition of horses, cattle, sheep and swine." (Cleveland Herald, Oct. 25, 1841.) The Society was organized under the provisions of law August 15, 1846 (Ohio Cultivator, 1846, p. 129), and a fair was held at Newburgh, October 13, 1847, "The town hall being used for exhibiting articles of manufacture, while the open space about the building was used for stock." (Ohio Cultivator, 1847, p. 183, and Cleveland Herald, September 9, 1847.) The annual fair was held for a number of years at Cleveland; it was then removed to Bedford, and finally to Chagrin Falls, where it has been held ever since. This Society is now known as the East Cuyahoga County Agricultural Society.

Under Section 3697 of the Revised Statutes (as amended April 13, 1893), Cuyahoga county is entitled to two county agricultural societies. The second one, called the West Cuyahoga County Agricultural Society, was organized in 1897, and it held its first fair at Berea, September 14, 15, 16, of that year.

Darke. The Darke County Agricultural Society was organized in November, 1852, and the first fair was held at Greenville, September 6-7, 1853. (Agricultural Report, 1853, p. 107.)

Defiance. The Defiance County Agricultural Society was first established March 25, 1848, but was not fully organized under the provisions of the law until March 14, 1851. The first fair was held at Defiance, October 7-8 of same year. There were one hundred and six entries of articles and animals for premiums. The exhibition of cattle was particularly creditable to the county. (Agricultural Report, 1851, p. 284). The Society was disbanded in 1887.

Delaware. The Delaware County Agricultural Society was organized the 28th of June, 1833, and on October 3 of the same year (according to the report of the Directors) "The first cattle show and fair, for the exhibition of live stock and domestic manufactures, was held by the Society, which excited much interest and was generally attended. The animals exhibited on that occasion, though as good as are generally to be found in the State, were not such as ought to satisfy an enterprising and emulous husbandry; and we hope, before long, to exhibit such an improvement as will show the utility of this Society. The articles of domestic manufacture, consisting of woolen jeans, linsey, flannel, blankets, stockings, linen, etc., were all excellent in their way, and reflected high credit on the industry and economy of the mothers and daughters of Delaware county." (Farmers' Record (Cincinnati), 1834.)

The Society was reorganized May 27, 1848, and a fair was held at Delaware, October 3 of the same year. (Agricultural Report, 1848, p. 45, and Ohio Cultivator, 1848, p. 156.)

Erie. The Erie and Huron Counties Agricultural Society was organized April 5, 1848, and a fair was held at Norwalk, October 12 of the same year. (Agricultural Report, 1848, p. 66.)

The Erie County Agricultural Society was organized February 14, 1855, and a fair was held at Sandusky, October 11-12 of the same year. (Ohio Cultivator, 1855, p. 281.)

Fairfield. The Fairfield County Agricultural Society was organized December 23, 1848. (Agricultural Report, 1849, p. 91.) The first fair of which we can find any record was held at Lancaster, October 21-22, 1852. (Ohio Cultivator, 1852, p. 297.)

Fayette. The Fayette County Agricultural Society was organized May 21, 1846, and a fair was held at Wilmington, October 7-8 of the same year. (Agricultural Report, 1846, p. 36.) The Society was disbanded in 1872.

Franklin. The Franklin County Agricultural Society was organized September 6, 1851, and a fair was held at Columbus, October 23 of the same year. (Agricultural Report, 1851, pp. 289-290.) The Society held a fair annually until the State Fair was permanently located in Columbus, 1874, after which time its exhibitions were discontinued.

Fulton. The Fulton County Agricultural Society was organized in 1858 (Agricultural Report, 1859, p. 165), and the first fair was held at Ottokee, October 6-7 of the same year. (Ohio Cultivator, 1858, p. 272.)

Gallia. The Gallia County Agricultural Society was organized August 15, 1846, and a fair was held at Gallipolis, October 25 of the same year. (Agricultural Report, 1846, p. 38, and Ohio Cultivator, 1846, pp. 121, 129). The Society was disbanded in 1889.

Geauga. The Geauga County Agricultural Society was organized July 30, 1846. "At a meeting of the citizens of the county of Geauga, convened at the Court House at Chardon, agreeable to previous notice, on the 30th day of July, 1846, it was resolved to disband the old organization and form a new society" (Ohio Cultivator, 1846, p. 121), and on that date the Society was organized under the state law and a fair was held at Chardon, September 8-9 of the same year. (Agricultural Report, 1846, p. 39). In a letter addressed to the President and Members of the State Board of Agriculture, under date of June 20, 1845, written by Mr. S. Rosa, that gentleman says, "A society for the promotion of agriculture was organized in Geauga county some eighteen or twenty years since." This may have been the "old organization" referred to in the above paragraph.

Greene. The Greene County Agricultural Society was organized in 1833, and report made by the Directors to the Legislature (House Journal, 1834, p. 622) and reorganized November 14, 1846 (Ohio Cultivator, 1846, p. 178), and a fair was held at Xenia September 8-9, 1847. (Agricultural Report, 1847, p. 98.)

Guernsey. The Guernsey County Agricultural Society was organized December 9, 1846 (Agricultural Report, 1846, p. 40). The first fair was held at Cambridge, October 28, 1847, and "The great number of persons in attendance, the exhibition of animals, products and manufactured articles, and the general interest manifested, exceeded the expectations of the most ardent supporters of the society." (Agricultural Report, 1847, p. 46.)

Hamilton. The Cincinnati Society for the Promotion of Agriculture, Manufactures and Domestic Economy was organized July 24, 1819, with General William Henry Harrison as President. On July 27th the following editorial appeared in the Cincinnati Gazette:

"The Association for the Promotion of Agriculture and Domestic Manufactures, which was the object of the meeting at the court house on the 24th inst., merits the patronage and active co-operation of the whole community, and more particularly of those who are engaged in agricultural pursuits. Town and country, if not equally, are both essentially interested in the success of this society, and we think those patriotic citizens who have set it on foot are entitled to the thanks of the whole country." (Liberty Hall and Cincinnati Gazette, July 27, 1819.)

The Society held a meeting June 27, 1820, and agreed upon premiums to be offered at their fair, to be held at E. Hutchinson's, on the last Tuesday of the following September, as follows:

	First	Second	Third
For linen, not less than twenty-five yards in piece. . .	$15 00	$10 00	$5 00
Woolen cloth, not less than twelve yards and three-fourths of a yard wide....................................	15 00	10 00	5 00
Bull calves, not more than one year old............	15 00	10 00	5 00
Heifer calves, not more than one year old..............	10 00	5 00	3 00
Milch cows, form of animal, quantity and quality of milk to be considered....................................	15 00	10 00	5 00
Merino rams:			
Best full bloods	8 00		
Best half blood....................................	5 00		
Common rams, long wool breed..........................	5 00	3 00	
Hogs, best breed, size and proneness to fatten early to be considered	15 00	10 00	5 00
Work oxen	15 00	10 00	5 00
Stud colts, not more than three years old............	25 00		
Brood mares..	15 00	10 00	5 00

—(Liberty Hall and Cincinnati Gazette, July 8, 1820.)

The Hamilton County Agricultural Society was organized June 9, 1827, and Article 2 of the constitution provided that "The Society's attention shall be confined to agriculture, domestic manufactures and rural affairs."

Article 16 provided that "At the annual meeting in June, one member from each township in the county shall be elected (to be called Curators) to form a Board of Agriculture; * * * * their duty shall be, that each Curator shall examine the state of agriculture in his township and the state of the growing crops; any superiority in domestic animals; to report all improvements in husbandry and domestic manufactures; the introduction of all valuable trees, seeds, plants or manures; all new and improved implements of agriculture; and such other matters as may tend to promote the objects of the Society; and the Board * * * * shall provide and arrange suitable accommodations for all cattle shows, plowing matches, exhibitions or fairs ordered by the Society, etc." (Western Tiller, June 15, 1827.)

The Hamilton County Agricultural Society was organized under the State law in 1846 (Agricultural Report, 1846, p. 42), and a fair was held at Carthage, September 24, 25, 26 of the same year, "the attendance being larger than at any previous fair for seven years." (Ohio Cultivator, 1846, p. 155.) Whether this was the Society established in 1827, or whether it was another organization, we cannot now tell. but the following record would indicate that it was: "Mr. Riddle presented a petition from the members of the Hamilton County Agricultural Society, praying for legislative relief," which was favorably acted upon. (House Journal, 1834, pp. 628, 630.)

Hancock. The Hancock County Agricultural Society was organized October 4, 1851, and the first fair was held at Findlay, October

15-16, 1852. (Agricultural Report, 1853, p. 124, and Ohio Cultivator, 1852, p. 281.)

Hardin. The Hardin County Agricultural Society was organized February 14, 1851. A fair was held at Kenton, October 22 of the same year, which was "Largely attended, notwithstanding the day was cold and disagreeable. The show of cattle and horses was much better than was anticipated, and no doubt is entertained that a return of our cattle show and fair will bring with it an exhibition of increasing interest." (Agricultural Report, 1851, pp. 305, 306.)

Harrison. The Harrison County Agricultural Society was organized December 12, 1846 (Agricultural Report, 1846, p. 43), and a fair was held at Cadiz, October 28, 1847. (Agricultural Report, 1847, p. 56.)

Henry. The Henry County Agricultural Society was organized in 1852, and the first fair was held at Napoleon, October 13-14, 1853. (Ohio Cultivator, 1853, p. 327.) The Society was disbanded in 1888.

Highland. The Highland County Agricultural Society was organized October 3, 1845 (Ohio Cultivator, 1845, p. 176). The Society was organized under the State law in September, 1848, and the first fair was held at Leesburg, October 19-20, 1849. "The cattle show was splendid, the horses, hogs and sheep were good, and the ladies' fair, on the second day, was fine." (Agricultural Report, 1849, p. 115, and Ohio Cultivator, 1849, p. 313.) The Society was disbanded in 1897.

Hocking. The Hocking County Agricultural Society was organized April 23, 1853, and a fair was held at Logan, October 18-19 of the same year. (Agricultural Report, 1853, p. 139, and Ohio Cultivator, 1853, p. 281.) The Society was disbanded in 1896.

Holmes. The Holmes County Agricultural Society was organized July 4, 1850, and the first fair was held at Millersburg, October 16-17, 1851. (Agricultural Report, 1851, p. 315.)

Huron. The Huron County Agricultural Society was organized in 1833, and a fair was held in the fall of that year. In 1838 Erie county was erected from territory originally embraced in Huron. The Society was reorganized April 5, 1848, under the name of "The Huron and Erie Counties Agricultural Society" (History of Huron and Erie Counties, p. 62), and a fair was held at Norwalk, October 12, 1848. (Ohio Cultivator, 1848, p. 137.) In 1855 the union was amicably dissolved and on January 17 of that year the Huron County Agricultural Society was organized, and a fair was held at Olena, October 23-24 of the same year. (Ohio Cultivator, 1855, p. 281.) The Society was disbanded in 1898.

Jackson. The Jackson County Agricultural Society was organized July 17, 1847, and a fair was held at Jackson, October 15 of the same year. (Agricultural Report, 1850, p. 295.) The Society was disbanded in 1882.

Jefferson. The Jefferson County Agricultural Society was organized September 2, 1845 (Ohio Cultivator, 1845, p. 145), and the first fair was held at Smithfield, October 19, 1849. (Ohio Cultivator, 1849, p. 372.)

Knox. The Knox County Agricultural Society was organized April 14, 1849. A fair was held at Mt. Vernon, October 23-24 of the same year, which "was universally attended by the farmers, merchants, and professional gentlemen of our county; the crowd was immense. The show of horses, cattle and sheep exceeded our most sanguine expectations, and in the department of domestic manufactures the exhibition was highly creditable." (Agricultural Report, 1849, pp. 131-133, and Ohio Cultivator, 1849, p. 313.) The Society was disbanded in 1894.

Lake. The Lake County Agricultural Society was organized in 1840, when Lake county was set off from Geauga, "since which time there has been much individual exertion to promote the general interest. Our fairs have been numerously attended annually, with much show of fine cattle and vegetable productions." (Letter from S. Rosa, Ohio Cultivator, 1845, p. 101.) The Society was organized under the provisions of the law in January, 1850, and the first fair was held at Painesville, October 1-2, 1851. (Agricultural Report, 1851, p. 328.) The Society was disbanded in 1895.

Lawrence. The Lawrence County Agricultural Society was organized May 27, 1847 (Agricultural Report, 1847, p. 65, and Ohio Cultivator, 1847, p. 95.) There is no record of any fair having been held by this organization. The Society was reorganized November 8, 1852, and the first fair was held at Ironton, September 15, 1853. (Agricultural Report, 1853, p. 152.)

Licking. The Licking County Agricultural Society was organized in 1833 (House Journal, 1834, p. 622), and a fair was held at Newark the same year. The historian says, "The list of premiums awarded at the fifth annual fair, held on the 9th and 10th of October, 1837, aggregated only ninety-nine dollars and fifty cents ($99.50); five dollars was the largest premium awarded to any one person * * * * and all were paid in salt spoons, dessert spoons, tea spoons, sugar tongs, sauce ladles, cream ladles, butter knives, etc." (History of Licking County, p. 265.) The Society was organized under provisions of law March 4, 1848, and a fair was held at Newark, October 11-12 of the same year. (Agricultural Report, 1848, p. 75, and Ohio Cultivator, 1848, p. 148.)

Logan. The Logan County Agricultural Society was organized October 26, 1850 (Agricultural Report, 1850, p. 314), and a fair was held at Bellefontaine, October 29-30, 1851. (Agricultural Report, 1851, p. 341.)

Lorain. The Lorain County Agricultural Society was organized on the 28th of June, 1833, and a fair was held at Elyria, October 3 of the same year. The Directors in their report to the General Assembly state that "The premiums distributed on that day among the successful competitors for the same, amounted to the sum of one hundred dollars, and though the competition for these premiums, from a variety of causes, was not so great as could have been wished, the result was, on the whole, encouraging to those who felt an interest in the welfare of the Society, and such as to warrant the belief that much good will result from its formation." (Senate Journal, 1834, p. 718.)

The Society was organized under the new law in May, 1846, and a fair was held at Elyria, September 30 of the same year. (Agricultural Report, 1846, p. 49.)

The Oberlin Agricultural and Horticultural Society was organized in 1835 (Patent Office Report, 1858, p. 183.) These two Societies worked together harmoniously for many years in promoting the agricultural interests of Lorain county.

Lucas. The Lucas and Fulton District Agricultural Society was organized November 15, 1849, and a fair was held at Toledo, October 16-17, 1850. (Agricultural Report, 1850, p. 325.) This joint organization was probably maintained until 1857, when the Lucas County Agricultural Society was organized and held a fair at Clinton Park, Toledo, October 13-14, 1858. (Agricultural Report, 1858, p. 218.) It was disbanded in 1896.

Madison. The Madison County Agricultural Society (after having been associated for a number of years with the Clark County Society, as a District Association) was organized November 20, 1852 (Ohio Cultivator, 1852, p. 360), and a fair was held at London, September 28-29, 1853. (Agricultural Report, 1853, p. 165.)

Mahoning. The Mahoning County Agricultural Society was organized April 8, 1847 (Ohio Cultivator, 1847, p. 68). The first fair was held at Canfield, October 5-6 of the same year, and "the exhibition was a good one, evincing a noble spirit of industry, enterprise and persevering energy, as well as much refinement of taste among the members of our Society, affording the strongest assurance that the cause of agricultural improvement in Mahoning is in the ascendancy." (Agricultural Report, 1847, pp. 70, 71.)

Marion. The Marion County Agricultural Society was organized November 30, 1850. This organization was the outgrowth of an agricultural meeting, the call for which was signed "Many Farmers" and was published in "The Buckeye Eagle," under date of October 18, 1850. The meeting was held soon after and in accordance with a resolution offered by Mr. J. S. Copeland and unanimously adopted, a meeting was appointed for November 30, for the purpose of effecting a permanent organization. On the date named a meeting was held and the following officers were elected:

E. Hardy, President; N. Messenger, Vice President; S. S. Bennett, Secretary; S. Frame, Treasurer; C. Brady, J. S. Copeland, William Taylor, Thomas Hopes and Joseph Laribee, Directors.

The first fair was held at Marion, October 21, 22, 1851. The program for the arrangement of the stock was as follows:

"The horses will be exhibited (Tuesday) at 1 o'clock P. M., at the northeast corner of the town plat; the bulls, cattle and sheep will be exhibited at 2 P. M. near Mr. Copeland's; the hogs will be penned and adjudged in Captain Hardy's tanyard lot, on the east side of Main street; the domestic articles, etc., will be exhibited in the court house and yard at 2 o'clock P. M." (The Buckeye Eagle, October 9, 1851.)

There were about forty entries in the horse department and over one hundred entries in the cattle department, and there was a large number of very fine sheep exhibited. The premiums on horses amounted to twenty-seven dollars; on cattle, forty-five dollars; on sheep, twenty dollars; on swine, six dollars; and on miscellaneous articles, fourteen dollars and seventy-five cents. The fair was well attended and was pronounced a success.

Medina. The Medina County Agricultural Society was organized May 19, 1846, and a fair was held at Medina in October of the same year. (Agricultural Report, 1846, p. 51.)

Meigs. The Meigs county Agricultural Society was organized March 25, 1851, and a fair was held at Middleport, Oct. 22 of the same year. (Agricultural Report, 1851, pp. 375-376.)

Mercer. The Mercer County Agricultural Society was organized May 28, 1847 (Ohio Cultivator, 1847, p. 95) and reorganized March 27, 1852. The first fair was held at Celina, October 28 of the same year. "This was but an experiment, but the result satisfied every one that we can and will have a flourishing society, and that the 'Swamps of Hoop-poledom' will yet be known in Ohio as second to no part of the state in fertility and productiveness." (Agricultural Report, 1852, p. 295.)

Miami. The Piqua Agricultural Society was organized in 1844 and a fair was held at Piqua, September 24-25 the same year. (Ohio Culitvator, 1845, pp. 71-73.) The Miami County Agricultural Society was organized November 26, 1846 (Agricultural Report, 1846, p. 54), and a fair was held at Troy, September 24, 1847. (Ohio Culitvator, 1847, p. 130.)

Monroe. The Monroe County Agricultural Society was organized December 25, 1850. The first fair was held at Woodsfield, November 4-5, 1851, at which there were "twenty-three entries of cattle, forty-eight of sheep, forty of horses, thirteen of hogs, the majority of which were of superior breeds. Under the head of domestic manufactures, we had some forty entries, which were exhibited on the second day of the fair in the Court House, and attracted the attention of quite a crowd of interested spectators." (Agricultural Report, 1851, p. 392, and Ohio Cultivator, 1851, p. 356.)

Montgomery. The Montgomery County Agricultural Society was organized in 1839, "and has held yearly exhibitions regularly since that time." (Agricultural Report, 1846, p. 53, and Ohio Cultivator, 1845, p. 62.) The fairs were held at Dayton, in the wagon yard in the rear of, and belonging to, Swanie's Hotel, East First street. The stable and sheds furnished ample accommodations for the cattle and other stock on exhibition. (History of Montgomery County, p. 502.) The Society was organized under the provisions of the state law August 22, 1846, and a fair was held at Dayton, October 22-23 of the same year. (Ohio Cultivator, 1846, pp. 121-171.)

Morgan. The Morgan County Agricultural Society was organized February 14, 1852. A fair was held at McConnellsville, October 5-6 of the same year, and "the exhibition of stock, grain, fruits, vegetables, dairy products, farm implements and various articles of domestic manufacture and mechanical skill were highly creditable to the citizens of this county." (Agricultural Report, 1852, pp. 306-307.)

Morrow. The Morrow County Agricultural Society was organized September 29, 1849, (Agricultural Report, 1849, p. 174), and the first fair was held at Mt. Gilead, October 17, 1850. (Ohio Cultivator, 1850, p. 265.)

Muskingum. The Union Township Agricultural Society was formed about 1843, and held a fair annually for a number of years. (Agricultural Report, 1847, p. 77.) The Muskingum County Agricultural Society was organized January 21, 1848, and a fair was held at Zanesville, October 19-20 of the same year. (Agricultural Report, 1848, p. 86, and Ohio Cultivator, 1848, p. 165.)

Noble. The Noble County Agricultural Society was organized in January, 1852, and a fair was held at Sarahsville, October 14-15 of the same year. (Agricultural Report, 1852, p. 315.)

Ottawa. The Ottawa and Sandusky District Agricultural Society was organized October 16, 1847 (Agricultural Report, 1847, p. 97, and Ohio Cultivator, 1847, p. 171), but we can find no record of a fair ever having been held by this Association.

The Ottawa County Agricultural Society was organized March 24, 1853, and a fair was held which, according to the records, "would have done credit to many older and more wealthy counties," but we are not told when or where it was held. (Agricultural Report, 1853, p. 193, and Ohio Cultivator, 1853, p. 120.)

Paulding. The Paulding County Agricultural Society was organized in 1859, and a fair was held at Junction in 1860. (Agricultural Report, 1863, p. 152.)

Perry. The Perry County Agricultural Society was organized in

August, 1850, and a fair was held near Somerset, October 18 of the same year. (Agricultural Report, 1850, pp. 418-419.)

Pickaway. The Pickaway County Agricultural Society was organized June 28th, 1833. The Directors state in their report to the Legislature that "owing to the advanced period of the season when the Society went into operation, it was thought inexpedient that any exhibitions for premiums should take place the present year. The means of the Society in the coming year will enable it to hold out inducements to those desirous of exhibiting stock and other articles worthy of attention, and from the lively interest manifested by our citizens in the subject, it is believed there is a spirit of emulation excited which cannot fail to produce interesting results." (House Journal, 1834, p. 455.) The early records of the Society were destroyed a number of years ago, and it is therefore impossible to give any particulars in regard to its early history. It was reorganized, however, under the provisions of the state law of 1846, on November 9, 1851, and a fair was held at Circleville September 28 of the same year. (Agricultural Report, 1852, p. 320.) The Association was disbanded in 1889.

Pike. The Pike County Agricultural Society was organized March 3, 1851, and a fair was held at Piketon, October 9 of the same year. (Agricultural Report, 1851, p. 400.) The Society was disbanded in 1860.

Portage. The Portage County Agricultural Society was organized May 9, 1825, at the Court House in Ravenna, and the first fair was held October 18 of the same year. Fairs were held annually until 1830, when, although officers were elected, no fair was held and the Society went out of existence. In pursuance of a notice given by the county auditor, a meeting was held at Ravenna, June 20, 1839, and another organization was effected. (History of Portage County, pp. 258-259.)

The Society was organized under the provisions of the law in March, 1846, and a fair was held at Ravenna, September 30-October 1 of the same year. (Agricultural Report, 1846, p. 58.)

Preble. The Preble County Agricultural Society was organized May 12, 1850, and its first fair was held at Somerset, October 17-18 of the same year. (Agricultural Report, 1850, p. 429.)

Putnam. The Putnam County Agricultural Society was organized February 3, 1855, and a fair was held at Gilboa, October 3-4 of the same year. (Ohio Cultivator, 1855, pp. 57-296.)

Richland. The Richland County Agricultural Society was organized October 27, 1849 (Ohio Cultivator, 1849, p. 345.) A fair was held at Bellville, September 24, 1850, and "a great number of people were in attendance. The show of horses, cattle, sheep and hogs was very good; the show of farming implements was not very great, but what were presented were of a good quality. A great many varieties of fruit of a superior quality were exhibited." (Agricultural Report, 1850, p. 438.)

Ross. The Ross County Agricultural Society was organized on the 28th of June, 1833, and a fair was held at Chillicothe November 1-2 of the same year. In regard to this exhibition the following extract from the report made by the Directors to the General Assembly, is of interest:

"A large number of valuable animals was exhibited. Many horses, some of which were of a superior kind and of great value, and a large number of brood mares with their colts, mostly the product of blooded horses. The number of these has been greatly increased in this county within a few years; and their quality and value much improved by the importations from Kentucky and Virginia of some of the best stock in those States. The exhibition of cattle was as good as the Society could expect at this, their first effort, to bring our farmers and stock men together. Among those exhibited were some of the improved breeds.

"In the exhibition of domestic manufactures, farming implements, etc., there were to be seen elegant specimens of jeans, flannel and carpeting; implements of husbandry of a new and improved form and kind, saddlery, leather, boots, hats, cabinet work, some hardware, and flour of the most superior quality.

"Premiums were distributed amounting in value to about two hundred dollars and generally given in silver plate." (Senate Journal, 1834, p. 416.)

The Society was organized under the provisions of the law of 1846, on August 17 of that year, and a fair was held at Chillicothe, October 14-15 following. (Agricultural Report, 1846, p. 61, and Ohio Cultivator, 1846, p. 148.)

Sandusky. The Sandusky County Agricultural Society was organized August 31, 1852, and a fair was held at Fremont, October 13-14 of the same year. (Agricultural Report, 1852, p. 348.)

Scioto. The Scioto County Agricultural Society was organized February 22, 1851. A fair was held at Portsmouth, September 20 of the same year, which was largely attended, "and a very general interest was manifested among the citizens. The directors were much gratified with the success attending this, their first effort. The show of horses, cattle and hogs was large, evidencing great improvement in each class of animals. The agricultural implements exhibited were of a superior order." (Agricultural Report, 1851, p. 434.) An Agricultural Society had been in existence previous to this, but the only record we have been able to find in regard to it is in the report for Scioto county in 1847, where the following reference is made to it:

"Agricultural Society—Officers: F. Cleveland, J. Moore, William Marsh, Portsmouth." (Agricultural Report, 1847, p. 86.)

The association disbanded in 1898 and a new Society was organized February 11, 1899, in accordance with the provisions of the state law.

Seneca. The Seneca County Agricultural Society was organized certainly as early as 1842, as evidenced by the first item in the report of the Treasurer of this Society, made to the State Board of Agriculture (Agricultural Report, 1851, p. 438), and the following quotation from a letter written by Samuel Waggoner, the Corresponding Secretary of the Society, in 1845:

"Let it not be said that Seneca county cannot sustain, through her enterprising farmers, a well-organized Agricultural Society. Was it not acknowledged by all present that our exhibitions at the fairs of 1842 and 1843 surpassed all expectations?" etc. (Ohio Cultivator, 1845, p. 42.) The Society was organized under the provisions of the law in 1851, and a fair was held at Tiffin, October 2-3 of the same year. (Ohio Cultivator, 1851, p. 326.) The Association was disbanded in 1892.

Shelby. The Shelby County Agricultural Society was organized in August, 1839, and the first fair was held in October of 1840. At this fair twenty-six premiums were awarded, and the amount paid out was forty-five dollars ($45). History of Shelby County, p. 364. and Agricultural Report, 1847, p. 86.)

The Society was organized under the State law April 19, 1851, and a fair was held at Sidney, October 15 of the same year. (Agricultural Report, 1851, p. 438.) The Association was disbanded in 1899.

Stark. The Stark County Agricultural Society was organized February 22, 1850, and a fair was held at Canton, October 15-16 of the same year. (Agricultural Report, 1850, p. 452.)

Summit. The Summit County Agricultural Society was organized November 28, 1849, and the first fair was held at Akron, October 3-4, 1850. (Agricultural Report, 1851, p. 464.)

Trumbull. The Trumbull County Agricultural Society was organized, according to Hon. Elisha Whittlesey, in 1818. In an address delivered before the Mahoning County Agricultural Society in 1860, he makes the following statement:

"My belief is that the first agricultural society in this State, if not the first west of the Alleghany mountains, was organized in Youngstown. A notice, given at the request of several gentlemen interested in agricultural science, was published in the *Chronicle*, at Warren, on the 26th of November, 1818, requesting a meeting of the farmers of Youngstown and adjacent towns, at James Hillman's, in Youngstown, on the 2d of December following, for the formation of an agricultural society. 'Farmers from a distance are requested to attend, as views are entertained that this society will embrace the agricultural interests of the whole country.' That notice I have no doubt was drawn from Judge George Tod, who was enthusiastically devoted to agriculture, horticulture and gardening. * * * * On the day appointed the meeting was held. George Tod, William Rayen and Calvin Pease were a committee to prepare and report articles of association. The report was made in due time, and the first article was as follows: 'The name of this Society shall be The Agricultural Society of Trumbull County, and the objects of the Society are the promotion and improvement of agriculture, rural economy and domestic manufactures.' At the second meeting George Tod was elected President. The Society continued in existence four years, and stimulated the farmers, or many of them, to adopt improvements in cultivation; and the females vied with each other in fabricating various articles of domestic wear." (Agricultural Report, 1860, pp. 426-427.) This was many years before the erection of Mahoning county, which occurred in 1846.

The Trumbull County Agricultural Society was organized under the provisions of law May 16, 1846, and a fair was held at Warren, October 22 of the same year. (Agricultural Report, 1846, p. 66.)

Tuscarawas. The Tuscarawas County Agricultural Society was organized November 10, 1849 (Agricultural Report, 1849, p. 208), and a very successful fair was held at Canal Dover, October 15-16, 1850. (Agricultural Report, 1850, p. 476.)

Union. The Union County Agricultural Society was organized May 28, 1847. A fair was held at Marysville, October 28 of the same year. "This was the first show of the kind in the county, and the cattle, sheep and hogs exhibited were superior animals, while the butter and cheese could not be excelled. The ladies were here, too, with their household manufactures, and gave great encouragement to the friends of the society." (Agricultural Report, 1847, p. 94.)

Van Wert. The Van Wert County Agricultural Society was, presumably, organized in 1857, and a fair was held at Van Wert, October 27-28 of the same year. (Agricultural Report, 1857, p. 291.)

Vinton. The Vinton County Agricultural Society was organized December 13, 1851, and the first fair was held at McArthur, October 5, 1852. (Agricultural Report, 1852, p. 368.) The Society was disbanded in 1890.

Warren. The Warren County Agricultural Society was organized in 1839 and held its first fair at Lebanon, November 15 of the same year. (History of Warren County, p. 328.)

The Society was organized December 1, 1849, under the provisions of the law of 1846, and a fair was held at Lebanon, September 26-27, 1850. (Agricultural Report, 1850, p. 497.)

Washington. The Agricultural and Mechanical Society of Washington (Ohio) and Wood (Virginia) counties was organized April 28, 1819. The Association had an exhibition at Marietta, October 18, 1826. A procession was formed in front of the court house and, escorted by a band of music, marched to the front of the Congregational church, where President Barker delivered an address. A dinner was served and the awards were announced after the members of the Society had regaled themselves. (Williams' History of Washington County, pp. 348-349.) "It is probable that from the formation of this Society in 1819 the county has not been without an organization of this kind. For many years the court house was used for floral hall, and the streets adjacent, or some convenient vacant lots, were used for the display of stock." (Dr. Andrews' History of Washington County, pp. 66-67.) In 1834 the Directors, in accordance with the provisions of the law, made formal report to the General Assembly. (House Journal, 1834, p. 622.) The Society was organized under the law of 1846, on June 24 of that year, and a fair was held at Marietta on the 15th of the following October. (Agricultural Report, 1846, p. 67.)

Wayne. The Wayne County Agricultural Society was organized in 1833, and the Agricultural Committee of the House, on December 7, 1833, made the following report: "The Committee for examining the memorial (presented by the directors of the Wayne County Agricultural Society) learn that the Society was organized under the provisions of the act of the last Legislature of Ohio, and is now in a prosperous condition, and that much benefit is expected to be derived from the organization of the Society." (House Journal, 1834, pp. 123, 132.) It was reorganized under the act of 1846, on Dec. 1, 1849, and a fair was held at Wooster, October 10-11, 1850. (Agricultural Report, 1850, p. 520.)

Williams. The Williams County Agricultural Society was organized June 14, 1856, and a fair was held "on the public square in Bryan," October 7-8 of the same year. "Sheds and pens were erected for the accommodation of stock. In the court house tables were erected for the display of fruits, vegetables, needle work, etc." (Agricultural Report, 1856, p. 338.) The Society was disbanded in 1887.

Wood. The Wood County Agricultural Society was organized June 9, 1851. A fair was held at Bowling Green October 15-16 of the same year, at which "a number of very fine horses were exhibited, also some good specimens of Durham and Devonshire bulls, etc. The show of corn, wheat and garden vegetables was fair; there was a good display of fruit." (Agricultural Report, 1851, p. 487.)

Wyandot. The Wyandot County Agricultural Society was organized January 3, 1852, and a fair was held at Upper Sandusky, September 30 of the same year. (Agricultural Report, 1852, p. 388.)

On February 8, 1853, "An Act supplementary to the Act entitled 'An Act for the Encouragement of Agriculture,'" was passed by the General Assembly, which declared all county agricultural societies organized under the original act, "bodies corporate."

A BRIEF HISTORY OF FARMERS' INSTITUTES IN OHIO.

Recognizing the importance of having an official record showing the growth of the Farmers' Institute in Ohio, the Department of Agriculture has prepared the following brief history of the movement from its inception to the present time. In its development we find three distinct stages, namely: the period of Suggestion, the period of Experiment and the period of Successful Operation; and, for the sake of convenience, the subject will be treated under these divisions.

SUGGESTION.

The first suggestion we have been able to find relative to lectures for the benefit of farmers, is from Dr. N. S. Townshend. Under date of February 15, 1845, he wrote as follows:

"Had we a State Agricultural Society, with a good board of managers, or should the Legislature constitute a State Board of Agriculture, then either of these might select a sufficient number of competent individuals to lecture, after the manner of medical institutions, on all the sciences having relations with agriculture. To one lecturer might be assigned Geology and Mineralogy, with their relations to draining, well-digging, etc., etc.; to another Chemistry, with its innumerable applications; to another Botany and vegetable Physiology as applied to gardening, orcharding and field culture; to another lecturer, Zoology, Comparative Anatomy and Physiology, showing their bearing upon the management of domestic animals; to another the principles of Pathology and Therapeutics, and their relation to the treatment of the diseases of animals, and all the operations of a surgical nature which the farmer is required to perform; then to another Natural Philosophy and the application of its principles in the perfecting of farming implements, etc., etc.

"And, why will not all who are qualified, commence lecturing in their own neighborhoods, and invite their neighbors to hear? Immense good might be done; at any rate an interest could be excited if nothing more." (Ohio Cultivator, 1845, p. 31.)

Dr. Townshend, under date of September 14, 1845, makes the following suggestions to the young farmers of Ohio in relation to the formation of Farmers' Clubs:

"Of the utility of such associations there can be but one opinion. With a good one in every township, the agriculture of our State might be speedily regenerated; without them, little comparatively will be accomplished. And now the most convenient season for holding evening meetings is approaching, and must not be allowed to pass away unimproved.

"Meetings ought to be held at least monthly, and as much more frequently as they can be made sufficiently interesting. They may be occupied with:

"First, Lectures. These should embrace all the sciences having any application to agriculture. Scientific men everywhere, to whatever profession they belong, as well as farmers, must be pressed into the service; all are alike interested, and the prosperity of our State requires their co-operation.

"Second, Reports. The visiting committee should visit the farm of every member, at least once during the year, and present a full report on each farm.

"Third, Discussion. Let some subject be announced for conversation, and members, one after another, give their opinion or experience in relation to the matter. Nothing is more profitable than friendly discussion.

"Whether any of the above hints shall be found worthy of adoption or otherwise, this at least is certain, that something systematic and effectual ought to be immediately attempted, if not already commenced, in every township in the State." (Ohio Cultivator, 1845, pp. 149-150.)

The organization of farmers' clubs in every township was the best suggestion that could have been made under existing conditions. There were only eighty-four miles of railroad in operation in the State in 1845 and the difficulty in transportation alone would have made the Institute of today impracticable.

In the Ohio Cultivator of October 15, 1846, Mr. M. B. Bateham (later a member of The State Board of Agriculture) says:

"In regard to lectures, we hope that the State Board will take some action upon the subject, and that several competent persons may be engaged to lecture in different parts of the State, where desired, during the coming winter. We know of no way by which more good could be accomplished at the present time."

The Ohio State Board of Agriculture, created by an act of the General Assembly, passed February 28, 1846, at its second meeting, held October 28 of the same year, adopted the following resolutions:

"*Resolved*, That this Board earnestly recommend the formation of township and neighborhood Farmers' Clubs or Societies, for the purpose of mutual improvement by means of libraries of agricultural books and periodicals, and discussions and lectures upon agriculture.

"*Resolved*, That this Board respectfully and earnestly ask gentlemen possessing the requisite knowledge of science and agriculture, in different parts of the State, to assist in the great work of promoting agricultural improvement, by delivering lectures to farmers, as they may be desired or have opportunity, especially during the season of fall and winter, and in places where clubs or societies may be formed for such purposes." (Agricultural Report, 1846, pp. 17-18.)

At a meeting of the Lorain County Agricultural Society, January 28, 1847, the following resolutions were adopted:

"*Resolved*, That we procure lecturers to lecture in each town in the county on *agriculture*, and solicit persons to become members of the Lorain County Agricultural Society.

"*Resolved*, That if any person will procure a house and notify the inhabitants of his town the time of meeting, and inform the lecturer, he will be present at the time and give a lecture on agriculture, etc.

"Dr. N. S. Townshend will lecture in Elyria, Carlisle, Eaton, Columbia, Ridgeville, Avon and Sheffield.

"Professor J. Dascomb will lecture in Grafton, La Grange, Penfield, Huntington, Wellington, Pittsfield and Russia.

"Professor J. H. Fairchild will lecture in Amherst, Black River, Brownhelm, Henrietta, Camden, Brighton and Rochester." (Ohio Cultivator, 1847, p. 36.)

Dr. Townshend's engagements were all filled, as were the others with one or two exceptions, "mostly on dark nights and over breakneck roads."

Ex-Governor Allen Trimble, President of The State Board of Agriculture for several years, in his report to the Board for 1848, says:

"I cannot close this report without again calling the attention of the General Assembly and our farming population to the importance and necessity, if we would succeed in our undertaking, of elevating agriculture among us to its true dignity and importance, by providing some efficient means for preparing our young men, at least, for adopting a more improved and perfect system of agriculture." (Agricultural Report, 1848, p. 12.)

At a meeting of The Ohio State Board of Agriculture, held December 4, 1850, Mr. Trimble introduced a resolution to appoint Professor Mather, State Agricultural Chemist and Corresponding Secretary, and suggested that were it deemed necessary, and could be accomplished by the professor, "lectures on the subject of agriculture should be delivered." (Agricultural Report, 1850, p. 53.)

In Secretary Mather's report of the work for 1851, he makes the following statement:

"The undersigned has labored hard to discharge as many of the duties prescribed, and others necessarily incident to the office, as he could, but has not had the time to travel much over the State to lecture to the counties on the subjects connected with agriculture, nor to prepare such lectures." (Agricultural Report, 1851, p. 143.)

For a number of years, now, the subject of better education for the farmers of the State had been agitated. Men prominent in public affairs recognized its necessity and hoped the time was ripe for effort.

EXPERIMENT.

Entering upon our second period, we find that a system of independent agricultural lectures was inaugurated at Oberlin, December 4, 1854, to continue for three months. There were four Departments in charge of the following gentlemen:

"Dr. James Dascomb, Chemistry in its application to soils, manures, animal and vegetable life, domestic, arts, etc.

"Dr. N. S. Townshend, Comparative Anatomy and Physiology, with special reference to the feeding and breeding of stock; History and description of Domestic Animals; Veterinary Medicine and Surgery, Entomology, etc.

"Dr. John S. Newberry, Geology and Mineralogy, Botany, etc.

"Professor James H. Fairchild, Natural Philosophy; Agricultural Mechanics; Farm Implements; Meteorology; Elements of Engineering and Land Surveying; Rural Architecture; Landscape Gardening and Farm Book-keeping." (Ohio Cultivator, 1854, p. 286.)

Only a few young men took advantage of these lectures at Oberlin, so during the winters of 1855 and 1856 they were held in Cleveland, but evidently with no better success, as they were then discontinued. Dr. Dascomb, at the close of the last term, remarked to a friend, "Ohio is not ready for this work and will not be for twenty years."

There seems to have been no further special effort in this direction for a number of years. But good seed had been sown. Farmers' clubs and other farmers' organizations increased rapidly in number and much valuable information was disseminated through these organizations and through the medium of the agricultural press.

In 1862 the United States government made a grant of land to Ohio for the purpose of establishing a State Agricultural and Mechanical College. After eight years of indefatigable labor on the part of the friends of agriculture to prevent a division of the fund, an act establishing an Agricultural and Mechanical College was passed by the General Assembly in 1870 and it was located in Columbus the same year. Buildings were erected as soon as possible and the College opened in 1873.

During all these years Dr. Townshend was teaching the doctrine of higher education for the farmer with unflagging zeal in addresses to county agricultural societies, farmers' clubs, etc. We cannot refrain from quoting here a paragraph from an address delivered by him before the Annual Meeting of the State Board of Agriculture held in 1874.

"What we want is to abandon the old idea that farming has no higher aim than getting a living, and instead of it to adopt the better one that the chief end of farming is the culture and improvement of the farmer and his family; and while it does this, it should, as a secondary result, give support and pay expenses. Farming needs a new departure, or to take a new start, and with a higher aim and purpose, so that it may secure to the farmer the same improvement in intellectual and social position that men expect to secure through the professions of law or medicine. These professions educate men by their daily work, and so will farming, when taken hold of in earnest and in the right way." (Agricultural Report, 1874, p. 115.)

A few years after the opening of the Agricultural and Mechanical College, the Board of Trustees decided ("under the inspiration of Dr. Townshend," Professor Orton says), in order to make "The State University more immediately serviceable to the agricultural interests of the State, to provide a course of free lectures on topics of practical interest to farmers." In 1878 an effort was made to establish in the College a course of lectures on the sciences relating to agriculture; it was proposed to have four lectures a day for ten weeks. Only seven farmers responded, so the effort was abandoned for that year.

The following year the matter was taken up by the Granges of the State, and when the lecture course opened, January 9, 1879, there was a large number of intelligent and earnest farmers in attendance, over one hundred names being entered on the class register. The course continued four weeks and all the members of the faculty took part, Dr. Townshend delivering two lectures a day and the others one each.

The second term began January 13, 1880, but the time was reduced to three weeks. The attendance was about the same as the previous year.

A third course was held in January, 1881, continuing ten days.

In 1880 Dr. W. I. Chamberlain was elected Secretary of The State Board of Agriculture, and in an address to the Board, made September 14, 1880, he asked for definite authority "to co-operate with county or other local agricultural societies and Granges in calling and organizing Farmers' Institutes or Agricultural Conventions during the present fall and winter. My own work would be to attend and address such meetings, take part in the discussions, and secure in advance competent lecturers and speakers, so as to create interest, insure the success of the meetings, diffuse agricultural information, and help secure better results in agriculture all through our State. This plan of holding Farmers' Institutes has been pursued in Michigan for a number of years with the most beneficial results." (Agricultural Report, 1880, p. 19.)

A resolution was at once adopted appropriating one thousand dollars ($1,000) out of the earnings of the State Fair for the purpose of inaugurating Farmers' Institutes in Ohio, and during the winter of 1880-81 the good work began.

We quote the following paragraph from President Orton's report to the Board of Trustees of the Ohio State University, under date of November 18, 1880:

"A system of county institutes for farmers has been recently established under the direction of The State Board of Agriculture. To the sessions of these institutes, Professor Townshend can render invaluable assistance, if provision can be made by which he can occasionally be released from college duties, to take part in this outside instruction. His special qualifications for such a line of work are universally recognized, and I believe that the college can serve the agricultural interests of the State by giving him as much freedom as possible in this respect. I hope that definite provision will be made for this service." (Report Ohio State University, 1880, p. 18.)

Such provision was made, not only for Dr. Townshend, but for other members of the Faculty as well.

In 1880-81 the following Farmers' Institutes were held under the auspices of the State Board of Agriculture:*

LIST OF FARMERS' INSTITUTES FOR 1880-81.

Wooster, Wayne county, November 19-20.
Lebanon, Warren county, December 7-8.
Oxford, Butler county, December 21-22.
Painesville, Lake county, December 30-31.
Tiffin, Seneca county, January 10.
Norton Center, Summit county, January 12-13.
Hicksville, Defiance county, January 14-15.
Akron, Summit county, January 19.
Salem, Columbiana county, January 21-22.
Mansfield, Richland county, January 25-26.
Celina, Mercer county, January 28-29.
Medina, Medina county, February 1-2.
Barnesville, Belmont county, February 4-5.
Toledo, Lucas county, February 7-8.
Wauseon, Fulton county, February 9-10.
Pulaski, Williams county, February 11-12.
Chagrin Falls, Cuyahoga county, February 14-15.
Burton, Geauga county, February 16-17.
Jefferson, Ashtabula county, February 17-18-19.
Springfield, Clark county, February 21-22.
Somerset, Perry county, February 24.
Ada, Hardin county, February 25-26.
Elyria, Lorain county, March 1-2.

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* Information in regard to these experimental institutes has been obtained from the following sources: Annual Agricultural Reports, Ohio Farmer, Ohio State Journal and Columbus Evening Dispatch, but it has been impossible to ascertain the dates on which some of the institutes were held.

Troy, Miami county, March 4-5.
Wilmington, Clinton county, March 8-9.
Marysville, Union county.
Ravenna, Portage county.

The lecturers announced for this season were President Edward Orton and Dr. N. S. Townshend, of the Ohio State University; and Secretary W. I. Chamberlain.

The interest manifested in these institutes by the farmers of the State was very encouraging to the friends of agriculture, and on March 22, 1881, the General Assembly increased the appropriation for the encouragement of agriculture one thousand dollars ($1,000) to enable the Board to carry on the work.

The following lists will show the gradual increase in numbers:

LIST OF FARMERS' INSTITUTES FOR 1881-82.

Urbana, Champaign county, December 3.
Beulah Church, Lawrence county, December 6-7.
Hillsboro, Highland county, December 9-10.
Elyria, Lorain county, December 14-15.
Mansfield, Richland county, December 16-17.
Defiance, Defiance county, December 19-20.
Bowling Green, Wood county, December 21-22.
Marysville, Union county, December 23-24.
Sandusky, Erie county, December 26-27.
Medina, Medina county, December 27-28.
Painesville, Lake county, December 28-29.
St. Clairsville, Belmont county, December 29-30.
Barnesville, Belmont county, December 30-31.
Marietta, Washington county, January 10-11.
Lebanon, Warren county, January 23-24.
Wilmington, Clinton county, January 25-26.
Chagrin Falls, Cuyahoga county, January 30-31.
Burton, Geauga county, February 1-2.
Jefferson, Ashtabula county, February 3-4.
Quaker City, Guernsey county, February 7-8.
Mt. Vernon, Knox county, February 9-10.
Wharton, Wyandot county, February 13-14.
Tiffin, Seneca county, February 15-16.
Findlay, Hancock county, February 17-18.
Ada, Hardin county, February 20-21.
Troy, Miami county, February 22-23.
Delaware, Delaware county, February 24-25.

Lecturers—Professor Edward Orton, Dr. N. S. Townshend and Professor W. R. Lazenby, of the Ohio State University; Professor A. J. Cook, of Michigan Agricultural College, and Secretary W. I. Chamberlain.

LIST OF FARMERS' INSTITUTES FOR 1882-83

Elyria, Lorain county, December 6-7.
Lore City, Guernsey county, December 13-14.
Lewisburg, Preble county, December 16.
Berlin Heights, Erie county, December 18-19.
Kenton, Hardin county, December 20-21.
St. Clairsville, Belmont county, December 26-27
Mt. Vernon, Knox county, December 27-28.
Port Clinton, Ottawa county, December 29-30.
Quaker Bottom, Lawrence Co., December 29-30
Lebanon, Warren county, January 2-3.
Canton, Stark county, January 2-3.
Hamilton, Butler county, January 4-5.
Troy, Miami county, January 5-6.
Marietta, Washington county, January 18-19.
Ravenna, Portage county, January 22-23.
Wauseon, Fulton county, January 23-24.
Wilmington, Clinton county, January 26-27.
Norwalk, Huron county, January 26-27.
Bowling Green, Wood county, January 29-30.
Painesville, Lake county, in January.
Salem, Columbiana county, January 31-February 1.
Vienna, Trumbull county, February 2-3.
Kinsman, Trumbull county, February 5-6.
Jefferson, Ashtabula county, February 7-8.
Burton, Geauga county, February 9-10.
Tiffin, Seneca county, February 12-13.
Mansfield, Richland county, February 14-15.
Bucyrus, Crawford county, February 16-17.
Cuyahoga Falls, Summit county, February 19-20.
Wapakoneta, Auglaize county, February 21-22.
Cambridge, Guernsey county.
Chagrin Falls, Cuyahoga county, in February.
Marysville, Union county, February 26.

Lecturers—President W. Q. Scott, Dr. N. S. Townshend and Professors Orton, Lazenby and Lord, of the Ohio State University, and Secretary W. I. Chamberlain.

LIST OF FARMERS' INSTITUTES FOR 1883-84.

Elyria, Lorain county, December 3-4.
Medina, Medina county, December 7-8.
Akron, Summit county, December 13-14.
Ravenna, Portage county, December 15.
Georgetown, Brown county, December 19-20.
Delaware, Delaware county, December 21-22.
Lewisburg, Preble county, December 26-27.
Troy, Miami county, December 28-29.
Warren, Trumbull county, December 31-January 1.
Leetonia, Columbiana county, January 2-3.
Cuyahoga Falls, Summit county, January 4-5.
Canton, Stark county, January 4-5.
Wilmington, Clinton county, January 7-8.
St. Clairsville, Belmont county, January 7-8.
Barnesville, Belmont county, January 9-10.
Marietta, Washington county, January 10-11.
Lebanon, Warren county, January 11-12.
Tiffin, Seneca county, January 23-24.
Mansfield, Richland county, January 25-26.
Dayton, Montgomery county, January 28-29.
Wapakoneta, Auglaize county, January 30-31.
Ada, Hardin county, February 1-2.
Port Clinton, Ottawa county, February 4-5.
Fremont, Sandusky county, February 5-6.
Norwalk, Huron county, February 6-7.
Burton, Geauga county, February 6-7.
Washington C. H., Fayette county, February 12.
Wauseon, Fulton county, February 18-19.
Marysville, Union county, February 23.
Coshocton, Coshocton county, February 25-26
Marion, Marion county, February 27-28.
Bowling Green, Wood county.
Bucyrus, Crawford county.
Defiance, Defiance county.
Findlay, Hancock county.
Frankfort, Ross county.
Jefferson, Ashtabula county.
McArthur, Vinton county.
McConnellsville, Morgan county.

Lecturers—President W. H. Scott, Dr. N. S. Townshend and Professors Orton, Tuttle, Lazenby and Lord, of the Ohio State University; Secretary W. I. Chamberlain, and Messrs. Brigham, Bonham, Brown, Cowden, Gould and Terry.

LIST OF FARMERS' INSTITUTES FOR 1884-85.

Kinsman, Trumbull county, December 8-9.
Warren, Trumbull county, December 10-11.
Salem, Columbiana county, December 12-13.
Bowling Green, Wood county, December 15-16.
Port Clinton, Ottawa county, December 17-18.
Elyria, Lorain county, December 19-20.
Mt. Gilead, Morrow county, December 22-23.
Bellefontaine, Logan county, December 23-24.
Washington C. H., Fayette county, December 26-27.
Frankfort, Ross county, December 26-27.
Marion, Marion county, December 29-30.
St. Clairsville, Belmont county, January 2-3.
Xenia, Greene county, January 5-6.
Dayton, Montgomery county January 7-8.
Wapakoneta, Auglaize county, January 8-9.
Troy, Miami county, January 9-10.
Delaware, Delaware county, January 15-16.
Millersburg, Holmes county, January 19-20.
Medina, Medina county, January 20-21.
Fremont, Sandusky county, January 22-23.
Tiffin, Seneca county, January 23-24.
Coshocton, Coshocton county, January 26-27.
Canton, Stark county, January 27-28.
Ravenna, Portage county, January 28-29.
Cuyahoga Falls, Summit county, January 30-31.
Chagrin Falls, Cuyahoga county, February 2-3.
Painesville, Lake county, February 3-4.
Jefferson, Ashtabula county, February 4-5.
Burton, Geauga county, February 6-7.
Chardon, Geauga county, February 6-7.
North Fairfield, Huron county, February 9-10.
Wauseon, Fulton county, February 11-12.
Marysville, Union county, February 13-14.
McArthur, Vinton county, February 16-17.
Marietta, Washington county, February 18-19.

Quaker City, Guernsey county, February 19-20.
Granville, Licking county, February 20-21.
Eaton, Preble county, February 24-25.
Mendon, Mercer county, February 25-26.
Ada, Hardin county, February 27-28.
Lebanon, Warren county.

Lecturers—President W. H. Scott, Dr. N. S. Townshend and Professors Orton, Tuttle, Lazenby and Lord, of the Ohio State University; Secretary W. I. Chamberlain, and Messrs. Brigham, Bonham, Brown, Ellis, Gould, Hurst, Terry and Tryon.

LIST OF FARMERS' INSTITUTES FOR 1885-86.

Bowling Green, Wood county, December 22.
Coshocton, Coshocton county, December 28-29.
Freeport, Harrison county, December 29-30.
Norwich, Muskingum county, December 30-31.
Medina, Medina county, January 4-5.
Elyria, Lorain county, January 5-6.
Port Clinton, Ottawa county, January 6-7.
Wauseon, Fulton county, January 7-8.
Fremont, Sandusky county, January 8-9.
Cuyahoga Falls, Summit county, January 14-15.
Haverhill, Scioto county, January 15-16.
Ravenna, Portage county, January 18-19.
Frankfort, Ross county, January 18-19.
Kinsman, Trumbull county, January 20-21.
McArthur, Vinton county, January 20-21.
Garrettsville, Portage county, January 21.
Millersburg, Holmes county, January 22-23.
Marietta, Washington county, January 22-23.
Burton, Geauga county, January 27-28.
Iberia, Morrow county, February 1-2.
Van Wert, Van Wert county, February 2-3.
Bowling Green, Wood county, February 2-3.
Marion, Marion county, February 3-4.
Mendon, Mercer county, February 3-4.
Marysville, Union county, February 5-6.
Wapakoneta, Auglaize county, February 5-6.
Troy, Miami county, February 8-9.
Eaton, Preble county, February 8-9.
Lebanon, Warren county, February 10-11.

Sidney, Shelby county, February 10-11.
Xenia, Greene county, February 12-13.
Bellefontaine, Logan county, February 12-13.
Mt. Vernon, Knox county, February 15-16.
Shreve, Wayne county, February 16-17.
Mansfield, Richland county, February 17-18.
Tiffin, Seneca county, February 19-20.
Pomeroy, Meigs county, February 22-23.
Marlboro, Stark county, February 24.
Granville, Licking county, February 25.
Mt. Pleasant, Jefferson county.
Jefferson, Ashtabula county.
Painesville, Lake county.
St. Clairsville, Belmont county.

Lecturers—President W. H. Scott, Dr. N. S. Townshend and Professors Orton, Lazenby, Tuttle, Lord, Detmers and Weber, of the Ohio State University; Secretary W. I. Chamberlain and Messrs. Brigham, Bonham, Brown, Crawford, Campbell, Farnsworth, Gould, Hurst, Ohmer, Terry, Tryon and Warder.

LIST OF FARMERS' INSTITUTES FOR 1886-87.

Ashland, Ashland county, December 6-7.
Mansfield, Richland county, December 6-7.
Ravenna, Portage county, December 8-9.
Shreve, Wayne county, December 8-9.
Canton, Stark county, December 10-11.
Kinsman, Trumbull county, December 10-11.
Marion, Marion county, December 13-14.
Elyria, Lorain county, December 14-15.
Forest, Hardin county, December 15-16.
Painesville, Lake county, December 15-16.
Mendon, Mercer county, December 17-18.
Chardon, Geauga county, December 17-18.
Van Wert, Van Wert county, December 20-21.
Fremont, Sandusky county, December 21-22.
Newark, Licking county, December 22-23.
Ottawa, Putnam county, December 23-24.
Coshocton, Coshocton county, December 23-24.
Lebanon, Warren county, December 30-31.
Cadiz, Harrison county, January 3-4.

East Liverpool, Columbiana county, January 4-5.
St. Clairsville, Belmont county, January 5-6.
Marietta, Washington county, January 6-7.
Mt. Pleasant, Jefferson county, January 7-8.
Cuyahoga Falls, Summit county, January 14-15.
McArthur, Vinton county, January 17-18.
Bowling Green, Wood county, January 18-19.
Wauseon, Fulton county, January 19-20.
Nelsonville, Athens county, January 19-20.
Bryan, Williams county, January 21-22.
Marlboro, Stark county, January 21-22.
Frankfort, Ross county, January 21-22.
Glendale, Hamilton county, January 24-25.
Haverhill, Scioto county, January 24-25.
North Fairfield, Huron county, January 25-26.
Troy, Miami county, January 26-27.
Cardington, Morrow county, January 27-28.
Millersburg, Holmes county, January 28-29.
Tiffin, Seneca county, February 1-2.
Eaton, Preble county, February 3-4.
Marysville, Union county, February 3-4.
Barnesville, Belmont county, February 7-8.
Quaker City, Guernsey county, February 9-10.
Norwich, Muskingum county, February 11-12.
Pomeroy, Meigs county, February 15-16.
Salem, Columbiana county, February 17-18.
Oxford, Butler county, February 26.
Springfield, Clark county.

Lecturers—President W. H. Scott, Dr. N. S. Townshend and Professors Orton, Lazenby, Tuttle, Lord, Detmers and Weber, of the Ohio State University; Secretary L. N. Bonham and Messrs. Brigham, Cowden, Hurst, McGregor, Smith, Talcott and Terry.

LIST OF FARMERS' INSTITUTES FOR 1887-88.

Ashland, Ashland county, November 14-15.
Belleville, Richland county, November 14-15.
Iberia, Morrow county, November 16-17.
Mt. Vernon, Knox county, November 16-17.
Marion, Marion county, November 18-19.
Newark, Licking county, November 18-19.

Norwich, Muskingum county, November 21-22.
Cadiz, Harrison county, November 21-22.
Nashville, Holmes county, November 21-22.
Cambridge, Guernsey county, November 23-24.
Smithfield, Jefferson county, November 23-24.
Shreve, Wayne county, November 23-24.
Barnesville, Belmont county, November 25-26.
Mt. Pleasant, Jefferson county, November 25-26.
Massillon, Stark county, November 25-26.
Kenton, Hardin county, November 28-29.
Bryan, Williams county, November 28-29.
Defiance, Defiance county, November 29-30.
Lima, Allen county, November 30-December 1.
Wauseon, Williams county, November 30-December 1.
Van Wert, Van Wert county, December 1-2.
Mendon, Mercer county, December 2-3.
Bowling Green, Wood county, December 2-3.
Nelsonville, Athens county, December 5-6.
Williamsport, Pickaway county, December 5-6.
Chester Hill, Morgan county, December 7-8.
Kingston, Ross county, December 7-8.
Williamsburg, Clermont county, December 7-8.
Pomeroy, Meigs county, December 9-10.
Frankfort, Ross county, December 9-10.
Oxford, Butler county, December 9-10.
Haverhill, Scioto county, December 12-13.
Lodi, Medina county, December 12-13.
Upper Sandusky, Wyandot county, December 13-14.
Rockwood, Lawrence county, December 14-15.
Norwalk, Huron county, December 14-15.
Tiffin, Seneca county, December 16-17.
North Fairfield, Huron county, December 16-17.
Springfield, Clark county, December 19-20.
Coshocton, Coshocton county, December 19-20.
Warren, Trumbull county, December 19-20.
Dayton, Montgomery county, December 21-22.
Granville, Licking county, December 21-22.
Burton, Geauga county, December 21-22.
Troy, Miami county, December 23-24.
Groveport, Franklin county, December 23-24.
Kinsman, Trumbull county, December 23-24.
Osborn Corners, Summit county, December 26-27.
Eaton, Preble county, December 26-27.
Medina, Medina county, December 28-29.
New Paris, Preble county, December 28-29.

Lebanon, Warren county, December 30-31.
Marietta, Washington county, January 5-6.
Millersburg, Holmes county, January 6-7.
Euclid, Cuyahoga county, January 16-17.
Ravenna, Portage county, January 17-18.
Painesville, Lake county, January 19-20.
Cuyahoga Falls, Summit county, January 20-21.
Canfield, Mahoning county, January 23-24.
Frazeysburg, Muskingum county, January 23-24.
Windham, Portage county, January 25-26.
St. Clairsville, Belmont county, January 27-28.
Caledonia, Marion county, January 30-31.
Miamisburg, Montgomery county, January 30-31.
Carrollton, Carroll county, January 31-February 1.
Mansfield, Richland county, February 1-2.
Delaware, Delaware county, February 2-3.
Sidney, Shelby county, February 3-4.
Franklin, Warren county, February 6-7.
Marysville, Union county, February 8-9.
Waterville, Lucas county, February 8-9.
Kingston Center, Delaware county, February 10-11.
Bellefontaine, Logan county, February 13-14.
Rimer, Putnam county, February 13-14.
Clyde, Sandusky county, February 15-16.
Sandusky, Erie county, February 17-18.
Hicksville, Defiance county, February 17-18.
Alliance, Stark county, February 20.
Circleville, Pickaway county, February 21-22.
Greenville, Darke county, February 24-25.
Gallipolis, Gallia county, March 1-2.

Lecturers—President W. H. Scott, Dr. N. S. Townshend, and Professors Orton, Lazenby, Lord, Tuttle, Detmers, Weber and Brown of the Ohio State University; Secretary L. N. Bonham and Messrs. Brigham, Cowden, Carskadon, Ellis, Hurst, McCormick, McGregor, McKelvey, Morrow, Parsons, Smith, Talcott and Terry.

LIST OF FARMERS' INSTITUTES FOR 1888-89.

Strongsville, Cuyahoga county, December 19-20.
Chardon, Geauga county, December 21-22.
Painesville, Lake county, December 21-22.
Springfield, Clark county, December 26-27.

Bryan, Williams county, December 26-27.
Miamisburg, Montgomery county, December 26-27.
West Richfield, Summit county, December 27-28.
Wauseon, Fulton county, December 28-29.
Franklin, Warren county, December 28-29.
New Paris, Preble county, December 28-29.
Sylvania, Lucas county, December 31-January 1.
Bellefontaine, Logan county, December 31-January 1.
Bowling Green, Wood county, January 2-3.
Waynesfield, Auglaize county, January 2-3.
Marion, Marion county, January 4-5.
Van Wert, Van Wert county, January 4-5.
Ohio City, Van Wert county, January 7-8.
Bucyrus, Crawford county, January 7-8.
Bluffton, Allen county, January 9-10.
Shelby, Richland county, January 9-10.
Tiffin, Seneca county, January 11-12.
Greenwich, Huron county, January 11-12.
Clyde, Sandusky county, January 14-15.
Sandusky, Erie county, January 16-17.
Upper Sandusky, Wyandot county, January 18-19.
Chester Hill, Morgan county, January 18-19.
Lodi, Medina county, January 21-22.
Groveport, Franklin county, January 21-22.
Gallipolis, Gallia county, January 23-24.
Sullivan, Ashland county, January 23-24.
Shreve, Wayne county, January 25-26.
Pomeroy, Meigs county, January 25-26.
Marengo, Morrow county, January 28-29.
Lore City, Guernsey county, January 28-29.
Caldwell, Noble county, January 30-31.
Fredericktown, Knox county, January 30-31.
Circleville, Pickaway county, February 1-2.
Troy, Miami county, February 1-2.
Woodsfield, Monroe county, February 1-2.
Marietta, Washington county, February 1-2.
Newton Falls, Trumbull county, February 4-5.
Freeport, Harrison county, February 4-5.
Mt. Pleasant, Jefferson county, February 6-7.
Marlboro, Stark county, February 6-7.
St. Clairsville, Belmont county, February 8-9.
Kent, Portage county, February 8-9.
Mulberry, Clermont county, February 11-12.
Glendale, Hamilton county, February 13-14.
Oxford, Butler county, February 15-16.

Canfield, Mahoning county, February 18-19.
New Lisbon, Columbiana county, February 20-21.
Frazeysburg, Muskingum county, February 22-23.
Collamer, Cuyahoga county, February 22-23.

Lecturers—President W. H. Scott, Dr. N. S. Townshend and Professors Lazenby and Weber, of the Ohio State University; Professors Thorne, Green, Hickman, Weed and Detmers, of the Ohio Agricultural Experiment Station; Secretary L. N. Bonham and Messrs. Brown, Ellis, Farnsworth, Gould, Longenecker, Smith, Sunderland, Terry and Tryon.

LIST OF FARMERS' INSTITUTES FOR 1889-90.

Greenwich, Huron county, December 2-3.
Lewisburg, Preble county, December 2-3.
Shelby, Richland county, December 4-5.
Greenville, Darke county, December 4-5.
Iberia, Morrow county, December 6-7.
Mendon, Mercer county, December 6-7.
London, Madison county, December 6-7.
Bucyrus, Crawford county, December 9-10.
Bryan, Williams county, December 9-10.
Upper Sandusky, Wyandot county, December 10-11.
Hicksville, Defiance county, December 11-12.
Marion, Marion county, December 13-14.
Van Wert, Van Wert county, December 13-14.
New Paris, Preble county, December 13-14.
Frazeysburg, Muskingum county, December 16-17.
Logan, Hocking county, December 16-17.
Cadiz, Harrison county, December 18-19.
Nelsonville, Athens county, December 18-19.
Springfield, Clark county, December 19-20.
Fernwood, Jefferson county, December 20-21.
Pomeroy, Meigs county, December 20-21.
Strongsville, Cuyahoga county, December 23-24.
Kingston, Ross county, December 23-24.
Dayton, Montgomery county, December 27-28.
Harrod, Allen county, December 30-31.
Kent, Portage county, December 30-31.
Bellefontaine, Logan county, January 1-2.
Windham, Portage county, January 1-2.
Kingston Center, Delaware county, January 3-4.

Bristolville, Trumbull county, January 3-4.
Mulberry, Clermont county, January 6-7.
Chester Hill, Morgan county, January 6-7.
Williamsburg, Clermont county, January 8-9.
Marietta, Washington county, January 8-9.
Wilmington, Clinton county, January 10-11.
Caldwell, Noble county, January 10-11.
Attica, Seneca county, January 17-18.
Collamer, Cuyahoga county, January 20-21
Sylvania, Lucas county, January 20-21.
Burton, Geauga county, January 22-23.
Wauseon, Fulton county, January 22-23.
Painesville, Lake county, January 24-25.
Sandusky, Erie county, January 24-25.
Millersburg, Holmes county, January 27-28.
Glendale, Hamilton county, January 27-28.
Wooster, Wayne county, January 29-30.
Sidney, Shelby county, January 29-30.
Troy, Miami county, January 31-February 1.
Minerva, Stark county, January 31-February 1.
Shreve, Wayne county, January 31-February 1.
Polk, Ashland county, February 3-4.
Fredericktown, Knox county, February 5-6.
Medina, Medina county, February 5-6.
Franklin, Warren county, February 7-8.
Osborn Corners, Summit county, February 7-8.
Canal Winchester, Franklin county, February 10-11.
Circleville, Pickaway county, February 12-13.
Haverhill, Scioto county, February 13-14.
Oxford, Butler county, February 14-15.
Barnesville, Belmont county, February 18-19.
Marysville, Union county, February 20-21.
Canfield, Mahoning county, February 20-21.

Lecturers—President W. H. Scott, Dr. N. S. Townshend and Professors Lazenby and Weber, of the Ohio State University; President Warfield and Professors Snyder and Hargett, of Miami University; President Super, of Ohio University (Athens); Professors Thorne, Green, Hickman, Weed and Detmers, of the Ohio Agricultural Experiment Station; Secretary L. N. Bonham and Messrs. Brown, Ellis, Elliott, Farnsworth, Gould, Hurst, Jorg, King, Parsons, Smith and Terry.

Farmers' Institutes had now been in operation, under the auspices of The State Board of Agriculture, for a period of ten years, and the experiment had proved entirely successful. In 1880-81 the Board held twenty-seven institutes, the first one being at Wooster, Wayne county, November 19-20, 1880, under the management of Secretary Chamberlain, Dr. Townshend and Professor Stoddard; the following season, 1881-82, the same number was held, twenty-seven; in 1882-83, thirty-three; 1883-84, thirty-nine; 1884-85, forty-one; 1885-86, forty-three; 1886-87, forty-seven; 1887-88, eighty-one; in 1888-89, the Board was able to appropriate only about one-half the amount that had been expended the previous year for this work and there was consequently a decrease in the number, only fifty-three being held; in 1889-90, sixty-two were held.

SUCCESSFUL OPERATION.

The farmers' institute had proved to be a valuable educational factor to the agriculturists of the State, and the General Assembly, recognizing this fact, on April 26, 1890, passed "An Act to provide for the organization and support of farmers' institute societies." This law provided from the general fund of each county a per capita allowance of five mills, but not to exceed two hundred dollars in any county; two-fifths of this amount to go to The State Board of Agriculture for the payment of per diem expenses of speakers appointed by the Board, and three-fifths to go to the local societies for their expenses.

This substantial recognition of the importance of the work gave fresh impetus to it, and institutes have been held in increasing numbers, as the following lists will show:

LIST OF FARMERS' INSTITUTES FOR 1890-91.

Warren, Trumbull county, December 1-2.
Mendon, Mercer county, December 1-2.
Lima, Allen county, December 1-2.
Canton, Stark county, December 3-4.
Canfield, Mahoning county, December 3-4.
Ohio City, Van Wert county, December 3-4.
Columbus Grove, Putnam county, December 3-4.
Carrollton, Carroll county, December 5-6.
Windham, Portage county, December 5-6.
Uniopolis, Auglaize county, December 5-6.
Benton Ridge, Hancock county, December 5-6.
Medina, Medina county, December 8-9.
Wooster, Wayne county, December 8-9.
Iberia, Morrow county, December 8-9.
Pomeroy, Meigs county, December 8-9.
Polk, Ashland county, December 10-11.
Killbuck, Holmes county, December 10-11.

Greenwich, Huron county, December 10-11.
Gallipolis, Gallia county, December 10-11.
Shelby, Richland county, December 12-13.
Warsaw, Coshocton county, December 12-13.
Strongsville, Cuyahoga county, December 12-13.
Proctorville, Lawrence county, December 12-13.
Olive Green, Delaware county, December 15-16.
Montgomery, Licking county, December 15-16.
North Jackson, Mahoning county, December 15-16.
Norwich, Muskingum county, December 15-16.
Westerville, Franklin county, December 17-18.
Frazeysburg, Muskingum county, December 17-18.
Signal, Columbiana county, December 17-18.
Quaker City, Guernsey county, December 17-18.
Delaware, Delaware county, December 19-20.
Plainfield, Coshocton county, December 19-20.
Marlboro, Stark county, December 19-20.
Barnesville, Belmont county, December 19-20.
Franklin, Warren county, December 26-27.
Caldwell, Noble county, December 29-30.
Millersburg, Holmes county, December 29-30.
Ashville, Pickaway county, December 29-30.
Kent, Portage county, December 29-30.
Woodsfield, Monroe county, December 31-January 1.
Shreve, Wayne county, December 31-January 1.
Kingston, Ross county, December 31-January 1.
Osborn Corners, Summit county, December 31-January 1.
St. Clairsville, Belmont county, January 2-3.
Lodi, Medina county, January 2-3.
Wilmington, Clinton county, January 2-3.
East Cleveland, Cuyahoga county, January 2-3.
Defiance, Defiance county, January 5-6.
Freeport, Harrison county, January 5-6.
Haverhill, Scioto county, January 5-6.
Napoleon, Henry county, January 7-8.
Chester Hill, Morgan county, January 7-8.
Cadiz, Harrison county, January 7-8.
Scioto, Scioto county, January 7-8.
Whitehouse, Lucas county, January 9-10.
Marietta, Washington county, January 9-10.
Wintersville, Jefferson county, January 9-10.
Waverly, Pike county, January 9-10.
Upper Sandusky, Wyandot county, January 19-20.
Ashtabula, Ashtabula county, January 19-20.
Paulding, Paulding county, January 19-20.

Port Clinton, Ottawa county, January 19-20.
Tiffin, Seneca county, January 21-22.
Chardon, Geauga county, January 21-22.
Hicksville, Defiance county, January 21-22.
Sandusky, Erie county, January 21-22.
Clyde, Sandusky county, January 23-24.
Kinsman, Trumbull county, January 23-24.
Montpelier, Williams county, January 23-24.
Elyria, Lorain county, January 23-24.
Bryan, Williams county, January 26-27.
Groveport, Franklin county, January 26-27.
Sidney, Shelby county, January 26-27.
Bellville, Richland county, January 26-27.
Wauseon, Fulton county, January 28-29.
Logan, Hocking county, January 28-29.
Bellefontaine, Logan county, January 28-29.
Fredericktown, Knox county, January 28-29.
Sylvania, Lucas county, January 30-31.
Nelsonville, Athens county, January 30-31.
Marion, Marion county, January 30-31.
Brownsville, Licking county, January 30-31.
Marysville, Union county, February 2-3.
Covington, Miami county, February 2-3.
Bluffton, Allen county, February 2-3.
Williamsport, Pickaway county, February 2-3.
Fremont, Sandusky county, February 4-5.
Mechanicsburg, Champaign county, February 4-5
Greenville, Darke county, February 4-5.
Frankfort, Ross county, February 4-5.
Dayton, Montgomery county, February 6-7.
New Paris, Preble county, February 6-7.
Bowling Green, Wood county, February 6-7.
Xenia, Greene county, February 6-7.
Rainsboro, Highland county, February 9-10.
New London, Butler county, February 9-10.
Canal Dover, Tuscarawas county,February 11-12.
Williamsburg, Clermont county, February 11-12.
Plain City, Madison county, February 11-12.
Harrison, Hamilton county, February 11-12.
Jamestown, Greene county, February 11-12.
Mt. Pleasant, Jefferson county, February 13-14.
Eaton, Preble county, February 13-14.
Miamisburg, Montgomery county, February 13-14.
Cardington, Morrow county, February 16-17.
Thornville, Perry county, February 16-17.

West Union, Adams county, February 17-18.
Painesville, Lake county, February 18-19.
London, Madison county, February 18-19.
Georgetown, Brown county, February 20-21.
Jefferson, Ashtabula county, February 20-21.
Centerburg, Knox county, February 20-21.
Mulberry, Clermont county, February 23-24.
Van Wert, Van Wert county, February 24-25.
Cable, Champaign county, February 24-25.
Glendale, Hamilton county, February 25-26.
Collinsville, Butler county, February 26-27.
Lebanon, Warren county, February 26-27.
Leetonia, Columbiana county, February 27-28.
Baltic, Tuscarawas county, February 27-28.
Townsend, Huron county, March 3-4.
Jackson Center, Shelby county, March 5.
Sabina, Clinton county, March 6-7.

Lecturers—President W. H. Scott, Dr. N. S. Townshend and Professors Lazenby, Weber and Kellicott, of the Ohio State University; President Warfield and Professors Snyder and Hargett, of Miami University; President Super and Professor Morrill, of Ohio University (Athens); Professors Thorne, Weed, Green and Hickman, of the Ohio Agricultural Experiment Station; and Messrs. Albaugh, Brown, Crawford, Cowden, Alston Ellis, E. C. Ellis, Farnsworth, Gilbert, Hulbert, Hurst, King, Lawrence, Leonard, Likens, Longenecker, McKelvey, Parsons, Perkins, Reid, Shawver, Shirer, Smith, Terry and Todd.

LIST OF FARMERS' INSTITUTES FOR 1891-92.

Cortland, Trumbull county, November 30-December 1.
Buckland, Auglaize county, November 30-December 1.
Pomeroy, Meigs county, November 30-December 1.
Canfield, Mahoning county, December 2-3.
Lima, Allen county, December 2-3.
Gallipolis, Galia county, December 2-3.
Signal, Columbiana county, December 4-5.
Bluffton, Allen county, December 4-5.
Baltic, Tuscarawas county, December 4-5.
Proctorville, Lawrence county, December 4-5.
Wooster, Wayne county, December 7-8.
Benton Ridge, Hancock county, December 7-8.

Thornville, Perry county, December 7-8.
Haverhill, Scioto county, December 7-8.
Killbuck, Holmes county, December 9-10.
Columbus Grove, Putnam county, December 9-10.
London, Madison county, December 9-10.
Waverly, Pike county, December 9-10.
Warsaw, Coshocton county, December 11-12.
Mendon, Mercer county, December 11-12.
Jamestown, Greene county, December 11-12.
Kingston, Ross county, December 11-12.
Frazeysburg, Muskingum county, December 14-15.
Tremont City, Clark county, December 14-15.
Seville, Medina county, December 14-15.
Westerville, Franklin county, December 14-15.
Fredericktown, Knox county, December 16-17.
Richwood, Union county, December 16-17.
Elyria, Lorain county, December 16-17.
Williamsport, Pickaway county, December 16-17.
Bellville, Richland county, December 18-19.
Marion, Marion county, December 18-19.
Strongsville, Cuyahoga county, December 18-19.
Sabina, Clinton county, December 18-19.
Olive Green, Delaware county, December 21-22.
Iberia, Morrow county, December 21-22.
Polk, Ashland county, December 21-22.
Greenwich, Huron county, December 21-22.
Granville, Licking county, December 23-24.
Shelby, Richland county, December 23-24.
Mechanicsburg, Champaign county, December 23-24.
Bloomville, Seneca county, December 23-24.
Norwich, Muskingum county, December 25-26.
Wellington, Lorain county, December 28-29.
Kent, Portage county, December 28-29.
Shreve, Wayne county, December 28-29.
Clyde, Sandusky county, December 30-31.
North Jackson, Mahoning county, December 30-31.
Canton, Stark county, December 30-31.
Port Clinton, Ottawa county, January 1-2.
Gustavus, Trumbull county, January 1-2.
Leetonia, Columbiana county, January 1-2.
East Toledo, Lucas county, January 4-5.
North Springfield, Summit county, January 4-5.
Wintersville, Jefferson county, January 4-5.
Wauseon, Fulton county, January 6-7.
Mallet Creek, Medina county, January 6-7.

Martin's Ferry, Belmont county, January 6-7.
Bryan, Williams county, January 8-9.
Millersburg, Holmes county, January 8-9.
Mt. Pleasant, Jefferson county, January 8-9.
Paulding, Paulding county, January 11-12.
Plainfield, Coshocton county, January 11-12.
Monroe, Butler county, January 11-12.
Fremont, Sandusky county, January 11-12.
Van Wert, Van Wert county, January 13-14.
Canal Dover, Tuscarawas county, January 13-14.
Lewisburg, Preble county, January 13-14.
Tiffin, Seneca county, January 13-14.
Greenville, Darke county, January 15-16.
Carrollton, Carroll county, January 15-16.
Franklin, Warren county, January 15-16.
Sandusky, Erie county, January 15-16.
Holgate, Henry county, January 15-16.
Covington, Miami county, January 18-19.
Freeport, Harrison county, January 18-19.
Mt. Blanchard, Hancock county, January 18-19.
Kings Creek, Champaign county, January 20-21.
Barnesville, Belmont county, January 20-21.
Upper Sandusky, Wyandot county, January 20-21
Leipsic, Putnam county, January 20-21.
Plain City, Madison county, January 22-23.
Quaker City, Guernsey county, January 22-23.
Red Oak, Brown county, January 22-23.
Bellefontaine, Logan county, January 22-23.
Garrettsville, Portage county, January 25-26.
Beallsville, Monroe county, January 25-26.
Springfield, Clark county, January 25-26.
Burton, Geauga county, January 27-28.
Caldwell, Noble county, January 27-28.
Marysville, Union county, January 27-28.
Ashtabula, Ashtabula county, January 29-30.
Marietta, Washington county, January 29-30.
Cardington, Morrow county, January 29-
Euclid, Cuyahoga county, February 1-2.
Rushsylvania, Logan county, February 1-2.
Osborn Corners, Summit county, February 1-2.
Jefferson, Ashtabula county, February 3-4.
Uniopolis, Auglaize county, February 3-4.
Townsend, Huron county, February 3-4.
Watertown, Washington county, February 3-4.
Painesville, Lake county, February 5-6.

Sidney, Shelby county, February 5-6.
Mt. Vernon, Knox county, February 5-6.
Venice, Butler county, February 8-9.
Frankfort, Ross county, February 8-9.
Williamsburg, Clermont county, February 8-9.
Marlboro, Stark county, February 8-9.
Glendale, Hamilton county, February 10-11.
Rainsboro, Highland county, February 10-11.
Harrison, Hamilton county, February 10-11.
Cadiz, Harrison county, February 10-11.
Lebanon, Warren county, February 12-13.
Mulberry, Clermont county, February 12-13.
Wilmington, Clinton county, February 12-13.
Brownsville, Licking county, February 12-13.
Miamisburg, Montgomery county, February 12-13.
Nelsonville, Athens county, February 15-16.
Georgetown, Brown county, February 15-16.
Jackson Center, Shelby county, February 15-16.
Logan, Hocking county, February 15-16.
Canal Winchester, Franklin county, February 17-18.
West Union, Adams county, February 17-18.
Xenia, Greene county, February 17-18.
Athens, Athens county, February 17-18.
Ashville, Pickaway county, February 19-20.
Harrisonville, Scioto county, February 19-20.
Dayton, Montgomery county, February 19-20.
Chester Hill, Morgan county, February 19-20.
Defiance, Defiance county, February 22-23.
Delaware, Delaware county, February 22-23.
Napoleon, Henry county, February 24-25.
Ohio City, Van Wert county, February 24-25.
Waterville, Lucas county, February 26-27.
Eaton, Preble county, February 26-27.
Bowling Green, Wood county, February 26-27.
Hicksville, Defiance county, February 29-March 1.
Montpelier, Williams county, March 2-3.
Nevada, Wyandot county, March 2-3.
Delta, Fulton county, March 4-5.
Dyesville, Meigs county, March 4-5.

Lecturers—President W. H. Scott and Professors Orton, Lazenby, Chalmers, Weber, Kellicott and Kellerman, of the Ohio State University; President W. O. Thompson, of Miami University; Professors Thorne, Green, Hickman and Webster, of the Ohio Agricultural Experiment Station; and Messrs. Albaugh, Agee, Brigham, Brown, Chamberlain, Cowden, Crawford, Derthick, Alston Ellis, E. C. Ellis, Farnsworth, Frazer, Gilbert, Hurst, Johnson, Likens, McKelvey, Rice, Shirer, Terry, Todd and Vine.

LIST OF FARMERS' INSTITUTES FOR 1892-93.

Andover, Ashtabula county, November 28-29.
Bryan, Williams county, November 28-29.
Pomeroy, Meigs county, November 28-29.
Mecca, Trumbull county, November 30-December 1.
Payne, Paulding county, November 30-December 1.
Mills Station, Gallia county, November 30-December 1.
North Jackson, Mahoning county, December 2-3.
Enterprise, Van Wert county, December 2-3.
Wilkesville, Vinton county, December 2-3.
Leetonia, Columbiana county, December 5-6.
Mendon, Mercer county, December 5-6.
Logan, Hocking county, December 5-6.
Smithfield, Jefferson county, December 7-8.
Buckland, Auglaize county, December 7-8.
Greencastle, Fairfield county, December 7-8.
Colerain, Belmont county, December 9-10.
Harrod, Allen county, December 9-10.
Groveport, Franklin county, December 9-10.
Brownsville, Licking county, December 9-10.
Carrollton, Carroll county, December 12-13.
Rushsylvania, Logan county, December 12-13.
London, Madison county, December 12-13.
Grelton, Henry county, December 14-15.
Canal Fulton, Stark county, December 14-15.
Caledonia, Marion county, December 14-15.
Utica, Licking county, December 14-15.
Columbus Grove, Putnam county, December 16-17.
Wellington, Lorain county, December 16-17.
Richwood, Union county, December 16-17.
Mt. Vernon, Knox county, December 16-17.
Benton Ridge, Hancock county, December 16-17.
Hicksville, Defiance county, December 19-20.
Wadsworth, Medina county, December 19-20
Iberia, Morrow county, December 19-20.
Polk, Ashland county, December 19-20.
Mt. Blanchard, Hancock county, December 21-22.

North Springfield, Summit county, December 21-22.
Upper Sandusky, Wyandot county, December 21-22.
Lexington, Richland county, December 21-22.
Ravenna, Portage county, December 23-24.
Republic, Seneca county, December 23-24.
Springfield, Clark county, December 23-24.
Ridgeville Corners, Henry county, December 23-24.
Greenwich, Huron county, December 26-27.
Clyde, Sandusky county, December 26-27.
West Union, Adams county, December 26-27.
Bowling Green, Wood county, December 28-29.
Berlin Heights, Erie county, December 28-29.
Haverhill, Scioto county, December 28-29.
Wauseon, Fulton county, December 30-31.
Strongsville, Cuyahoga county, December 30-31.
Proctorville, Lawrence county, December 30-31.
Williamsport, Pickaway county, December 30-31.
Antwerp, Paulding county, January 2-3.
Kingston, Ross county, Jauuary 2-3.
Monroeville, Huron county, January 2-3.
Defiance, Defiance county, January 4-5.
Waverly, Pike county, January 4-5.
Elyria, Lorain county, January 4-5.
Napoleon, Henry county, January 6-7.
Ashville, Pickaway county, January 6-7.
Wilmington, Clinton county, January 6-7.
Sandusky, Erie county, January 6-7.
Newton Falls, Trumbull county, January 6-7.
Shelby, Richland county, January 9-10.
Harrison, Hamilton county, January 9-10.
Port Clinton, Ottawa county, January 9-10.
Dyesville, Meigs county, January 9-10.
Wooster, Wayne county, January 11-12.
Paddy's Run, Butler county, January 11-12.
Fremont, Sandusky county, January 11-12.
Athens, Athens count, January11-12.
Osborn Corners, Summit county, January 13-14.
Eaton, Preble county, January 13-14.
Covington, Miami county, January 13-14.
Marietta, Washington county, January 13-14.
Windham, Portage county, January 16-17.
Red Oak, Brown county, January 16-17.
Sidney, Shelby county, January 16-17.
Canton, Stark county, January 16-17.
Chardon, Geauga county, January 18-19.

Glendale, Hamilton county, January 18-19.
Bellefontaine, Logan county, January 18-19.
Freeport, Harrison county, January 18-19.
Painesville, Lake county, January 20-21.
Franklin, Warren county, January 20-21.
Marion, Marion county, January 20-21.
Mt. Pleasant, Jefferson county, January 20-21.
Ashtabula, Ashtabula county, January 23-24.
Thornville, Perry county, January 23-24.
New Paris, Preble county, January 23-24.
Montpelier, Williams county, January 23-24.
Euclid, Cuyahoga county, January 25-26.
White Cottage, Muskingum county, January 25-26.
Neptune, Mercer county, January 25-26.
Delta, Fulton county, January 25-26.
Killbuck, Holmes county, January 27-28.
Caldwell, Noble county, January 27-28.
Van Wert, Van Wert county, January 27-28.
Waterville, Lucas county, January 27-28.
Warsaw, Coshocton county, January 30-31.
Beallsville, Monroe county, January 30-31.
Cable, Champaign county, January 30-31.
Norwich, Muskingum county, February 1-2.
Quaker City, Guernsey county, February 1-2.
Vandalia, Montgomery county, February 1-2.
Uniopolis, Auglaize county, February 1-2.
Barnesville, Belmont county, February 3-4.
Westerville, Franklin county, February 3-4.
Millersburg, Holmes county, February 3-4.
Harrison Mills, Scioto county, February 3-4.
Troy, Miami county, February 3-4.
Jackson Center, Shelby county, February 3-4.
Plain City, Madison county, February 6-7.
Nevada, Wyandot county, February 6-7.
Canfield, Mahoning county, February 6-7.
Marysville, Union county, February 8-9.
Tiffin, Seneca county, February 8-9.
New Lisbon, Columbiana county, February 8-9.
Cedarville, Greene county, February 10-11.
East Toledo, Lucas county, February 10-11.
Cadiz, Harrison county, February 10-11.
Mulberry, Clermont county, February 10-11.
Sulphur Springs, Crawford county, February 13-14.
Leipsic, Putnam county, February 13-14.
Plainfield, Coshocton county, February 13-14.

Fredericktown, Knox county, February 15-16.
Bluffton, Allen county, February 15-16.
Enon, Clark county, February 15-16.
Shreve, Wayne county, February 17-18.
Brunswick, Medina county, February 17-18.
Bloomingburg, Fayette county, February 17-18.
Olive Green, Delaware county, February 17-18.
Xenia, Greene county, February 17-18.
Cardington, Morrow county, February 20-21.
Greenville, Darke county, February 20-21.
Rainsboro, Highland county, February 20-21.
Watertown, Washington county, February 20-21.
Mechanicsburg, Champaign county, February 22-23.
Miamisburg, Montgomery county, February 22-23.
Grand Rapids, Wood county, February 22-23.
New Vienna, Clinton county, February 22-23.
Chester Hill, Morgan county, February 22-23.
Piqua, Miami county, February 24-25.
Delaware, Delaware county, February 24-25.
Collinsville, Butler county, February 24-25.
Lebanon, Warren county, February 24-25.
Frankfort, Ross county, February 24-25
Williamsburg, Clermont county, February 27-28.
Georgetown, Brown county, March 1-2.

Lecturers—President W. H. Scott and Professors Lazenby, Chalmers, Kellerman, Weber and Hunt, of the Ohio State University; President W. O. Thompson, of Miami University; Professors Thorne, Green, Hickman and Webster, of the Ohio Agricultural Experiment Station; and Messrs. Agee, Brigham, Brown, Chamberlain, Crawford, Derthick, S. H. Ellis, Gould, Hurst, Johnson, McKelvey, Parsons, Shawver, Shirer, Terry and Todd.

LIST OF FARMERS' INSTITUTES FOR 1893-94.

Andover, Ashtabula county, December 4-5.
Montpelier, Williams county, December 4-5.
Richmond, Jefferson county, December 4-5.
Harrod, Allen county, December 4-5.
Kinsman, Trumbull county, December 6-7.
Ohio City, Van Wert county, December 6-7.
Carrollton, Carroll county, December 6-7.
Degraff, Logan county, December 6-7.

North Jackson, Mahoning county, December 8-9.
Liberty Center, Henry county, December 8-9.
Marlboro, Stark county, December 8-9.
Proctorville, Lawrence county, December 8-9.
Springfield, Clark county, December 8-9.
Columbia Center, Lorain county, December 11-12.
Spencer, Lucas county, December 11-12.
North Springfield, Summit county, December 11-12.
Fremont, Sandusky county, December 13-14.
Shreve, Wayne county, December 13-14.
Dover, Cuyahoga county, December 15-16.
Attica, Seneca county, December 15-16.
Barnesville, Belmont county, December 15-16.
Fredericktown, Knox county, December 15-16.
Neptune, Mercer county, December 15-16.
Massillon, Stark county, December 18-19.
Wellington, Lorain county, December 18-19.
Thornville, Perry county, December 18-19.
Payne, Paulding county, December 18-19.
Piedmont, Harrison county, December 20-21.
Chatham Center, Medina county, December 20-21.
Brownsville, Licking county, December 20-21.
Hicksville, Defiance county, December 20-21.
Colerain, Belmont county, December 22-23.
Wooster, Wayne, county, December 22-23.
White Cottage, Muskingum county, December 22-23.
Bowling Green, Wood county, December 22-23.
Woodsfield, Monroe county, December 25-26.
Polk, Ashland county, December 25-26.
New Lexington Perry county, December 25-26.
Defiance, Defiance county, December 25-26.
Caldwell, Noble county, December 27-28.
Lexington, Richland county, December 27-28.
Amanda, Fairfield county, December 27-28.
Napoleon, Henry county, December 27-28.
Quaker City, Guernsey county, December 29-30.
Greenwich, Huron county, December 29-30.
Plainfield, Coshocton county, December 29-30.
Wauseon, Fulton county, December 29-30.
Wilkesville, Vinton county, January 1-2.
Williamsburg, Clermont county, January 1-2.
Kent, Portage county, January 1-2.
Sulphur Springs, Crawford county, January 1-2.
Mills Station, Gallia county, January 3-4.
Hillsboro, Highland county, January 3-4.

Leetonia, Columbiana county, January 3-4.
Edison, Morrow county, January 3-4.
Chester, Meigs county, January 5-6.
Haverhill, Scioto county, January 5-6.
North Lima, Mahoning county, January 5-6.
Delaware, Delaware county, January 5-6.
Dyesville, Meigs county, January 5-6.
Antwerp, Paulding county, January 8-9.
Kingston, Ross county, January 8-9.
Farmington, Trumbull county, January 8-9.
Frazeysburg, Muskingum county, January 8-9.
Nevada, Wyandot county, January 8-9.
Osborn Corners, Summit county, January 10-11.
Warsaw, Coshocton county, January 10-11.
Columbus, Franklin county, January 10-11.
Burton, Geauga county, January 12-13.
Millersburg, Holmes county, January 12-13.
Coolville, Athens county, January 12-13.
Ashville, Pickaway county, January 12-13.
Mallet Creek, Medina county, January 15-16.
Grand Rapids, Wood county, January 15-16.
Greenville, Darke county, January 15-16.
Clyde, Sandusky county, January 17-18.
Leipsic, Putnam county, January 17-18.
Sidney, Shelby county, January 17-18.
Waterville, Lucas county, January 19-20.
Sandusky, Erie county, January 19-20.
Rainsboro, Highland county, January 19-20.
Watertown, Washington county, January 19-20.
Bellefontaine, Logan county, January 22-23.
New Lisbon, Columbiana county, January 22-23.
Centerburg, Knox county, January 22-23.
Columbus Grove, Putnam county, January 22-23.
Gutman, Auglaize county, January 22-23.
Kings Creek, Champaign county, January 24-25.
Garrettsville, Portage county, January 24-25.
Kingston Center, Delaware county, January 24-25.
Mendon, Mercer county, January 24-25.
Jackson Center, Shelby county, January 24-25.
Cedarville, Greene county, January 26-27.
Chagrin Falls, Cuyahoga county, January 26-27.
Marysville, Union county, January 26-27.
Van Wert, Van Wert county, January 26-27.
Monroe, Butler county, January 26-27.
Chester Hill, Morgan county, January 26-27.

Wakeman, Huron county, January 29-30.
Berlin Heights, Erie county, January 29-30.
Vandalia, Montgomery county, January 29-30.
Port Clinton, Ottawa county, January 29-30.
Decatur, Brown county, January 29-30.
Piqua, Miami county, January 31-February 1.
Shelby, Richland county, January 31-February 1.
Utica, Licking county, January 31-February 1.
Manchester, Adams county, January 31-February 1.
Ada, Hardin county, February 2-3.
Marion, Marion county, February 2-3.
Canal Winchester, Franklin county, February 2-3.
Harrison Mills, Scioto county, February 2-3.
Bluffton, Allen county, February 5-6.
Richwood, Union county, February 5-6.
Mechanicsburg, Champaign county, February 5-6.
Piketon, Pike county, February 5-6.
Mt. Blanchard, Hancock county, February 7-8.
Upper Sandusky, Wyandot county, February 7-8.
Troy, Miami county, February 7-8.
Frankfort, Ross county, February 7-8.
Delta, Fulton county, February 9-10.
Tiffin, Seneca county, February 9-10.
Benton Ridge, Hancock county, February 9-10.
New Paris, Preble county, February 9-10.
New Vienna, Clinton county, February 9-10.
Uniopolis, Auglaize county, February 12-13.
Eaton, Preble county, February 12-13.
Greencastle, Fairfield county, February 12-13.
Tremont City, Clark county, February 14-15.
Glendale, Hamilton county, February 14-15.
Athens, Athens county, February 14-15.
Xenia, Greene county, February 16-17.
Miamisburg, Montgomery county, February 16-17.
Marietta, Washington county, February 16-17.
Logan, Hocking county, February 16-17.
Marengo, Morrow county, February 19-20.
London, Madison county, February 19-20.
Westerville, Franklin county, February 19-20.
Painesville, Lake county, February 21-22.
Waynesville, Warren county, February 21-22.
Cadiz, Harrison county, February 21-22.
Jefferson, Ashtabula county, February 23-24.
Wilmington, Clinton county, February 23-24.
Mt. Pleasant, Jefferson county, February 23-24.

Williamsport, Pickaway county, February 26-27.
Harrison, Hamilton county, February 26-27.
Bloomingburg, Fayette county, February 28-29.
Ross, Butler county, February 28-29.
Loveland, Clermont county, March 2-3.
Franklin, Warren county, March 2-3.
Bryan, Williams county, March 2-3.

Lecturers—President W. H. Scott and Professors Lazenby, Chalmers, Kellerman and Hunt, of the Ohio State University; President W. O. Thompson, of Miami University; President Super, of Ohio University (Athens); Professors Thorne, Green, Hickman and Webster, of the Ohio Agricultural Experiment Station; and Messrs. Agee, Begg, Brigham, Brown, Chamberlain, Crawford, Derthick, S. H. Ellis, Gilbert, Gould, Hurst, Johnson, McKelvey, Parsons, Shawver, Shirer, Todd and Vine.

LIST OF FARMERS' INSTITUTES FOR 1894-95.

Greencastle, Fairfield county, December 3-4.
Wellington, Lorain county, December 3-4.
Fremont, Sandusky county, December 3-4.
Logan, Hocking county, December 5-6.
Windham, Portage county, December 5-6.
Berlin Heights, Erie county, December 5-6.
Chesterfield, Morgan county, December 5-6.
Dyesville, Meigs county, December 7-8.
Cortland, Trumbull county, December 7-8.
Mallet Creek, Medina county, December 7-8.
Coolville, Athens county, December 7-8.
Wilkesville, Vinton county, December 10-11.
Ashtabula, Ashtabula county, December 10-11.
Osborn Corners, Summit county, December 10-11.
Haverhill, Scioto county, December 10-11.
Fairfield Church, Gallia county, December 12-13.
Alliance, Stark county, December 12-13.
Piketon, Pike county, December 12-13.
Labelle, Lawrence county, December 14-15.
Strongsville, Cuyahoga county, December 14-15.
Columbiana, Columbiana county, December 14-15.
Rainsboro, Highland county, December 14-15.
Chester, Meigs county, December 14-15.
Wooster, Wayne county, December 17-18.

Payne, Paulding county, December 17-18.
Norwich, Muskingum county, December 17-18.
Greenwich, Huron county, December 17-18.
Springfield, Clark county, December 17-18.
Hicksville, Defiance county, December 19-20.
White Cottage, Muskingum county, December 19-20.
Seville, Medina county, December 19-20.
Lewisburg, Preble county, December 19-20.
Bloomville, Seneca county, December 21-22.
Montpelier, Williams county, December 21-22.
Thornville, Perry county, December 21-22.
New Philadelphia, Tuscarawas county, December 21-22.
Versailles, Darke county, December 21-22.
Richfield Center, Lucas county, December 24-25.
Utica, Licking county, December 24-25.
Ohio City, Van Wert county, December 24-25.
Plain City, Madison county, December 26-27.
Bryan, Williams county, December 26-27.
Warsaw, Coshocton county, December 26-27.
Mt. Blanchard, Hancock county, December 26-27.
Leipsic, Putnam county, December 26-27.
Kingston Center, Delaware county, December 28-29.
Wauseon, Fulton county, December 28-29.
Newcomerstown, Tuscarawas county, December 28-29.
Buckland, Auglaize county, December 28-29.
Bowling Green, Wood county, December 28-29.
Jamestown, Greene county, December 28-29.
Westville, Champaign county, December 31-January 1.
New Lisbon, Columbiana county, December 31-January 1.
Neptune, Mercer county, December 31-January 1.
North Springfield, Summit county, December 31-January 1.
Mt. Vernon, Knox county, December 31-January 1.
Gutman, Auglaize county, January 2-3.
Canfield, Mahoning county, January 2-3.
Grand Rapids, Wood county, January 2-3.
Carrollton, Carroll county, January 2-3.
Bellville, Hardin county, January 2-3.
Ada, Hardin county, January 4-5.
Ravenna, Portage county, January 4-5.
Antwerp, Paulding county, January 4-5.
Navarre, Stark county, January 4-5.
Sulphur Springs, Crawford county, January 4-5.
Nevada, Wyandot county, January 7-8.
Greensburg, Trumbull county, January 7-8.
Defiance, Defiance county, January 7-8.

Euclid, Cuyahoga county, January 7-8.
Savannah, Ashland county, January 7-8.
Bucyrus, Crawford county, January 9-10.
Jefferson, Ashtabula county, January 9-10.
Ridgeville Corners, Henry county, January 9-10.
Elyria, Lorain county, January 9-10.
Cardington, Morrow county, January 9-10.
Marion, Marion county, January 11-12.
Chardon, Geauga county, January 11-12.
Van Wert, Van Wert county, January 11-12.
Port Clinton, Ottawa county, January 11-12.
Delaware, Delaware county, January 11-12.
Clyde, Sandusky county, January 14-15.
North Jackson, Mahoning county, January 14-15.
Mulberry, Clermont county January 14-15.
Greenville, Darke county, January 16-17.
Maumee, Lucas county, January 16-17.
Shreve, Wayne county, January 16-17.
Marysville, Union county, January 16-17.
Liberty Church, Brown county, January 16-17.
Napoleon, Henry county, January 18-19.
Killbuck, Holmes county, January 18-19
Bellefontaine, Logan county, January 18-19.
North Liberty, Adams county, January 18-19.
Wilmington, Clinton county, January 18-19.
Monroeville, Huron county, January 21-22.
Harrod, Allen county, January 21-22.
Rockford, Mercer county, January 21-22.
Sandusky, Erie county, January 23-24.
Sidney, Shelby county, January 23-24.
Delta, Fulton county, January 23-24.
Tiffin, Seneca county, January 25-26.
Covington, Miami county, January 25-26.
Miamisburg, Montgomery county, January 25-26.
Columbus Grove, Putnam county, January 25-26.
Mechanicsburg, Champaign county, January 28-29.
Lebanon, Warren county, January 28-29.
Jackson Center, Shelby county, January 28-29.
Plainfield, Coshocton county, January 28-29.
Xenia, Greene county, January 30-31.
Glendale, Hamilton county, January 30-31.
Bluffton, Allen county, January 30-31.
Barnesville, Belmont county, January 30-31.
Williamsport, Pickaway county, February 1-2.
Williamsburg, Clermont county, February 1-2.

Benton Ridge, Hancock county, February 1-2.
Colerain, Belmont county, February 1-2.
Groveport, Franklin county, February 4-5.
Hillsboro, Highland county, February 4-5.
Richmond, Jefferson county, February 4-5.
Brownsville, Licking county, February 6-7.
Midland City, Clinton county, February 6-7.
Caldwell, Noble county, February 6-7.
Barlow, Washington county, February 6-7.
Shelby, Richland county, February 8-9.
Fredericktown, Knox county, February 8-9.
Ashville, Pickaway county, February 8-9.
Woodsfield, Monroe county, February 8-9.
Athens, Athens county, February 8-9.
Rehoboth, Perry county, February 11-12.
Smithfield, Jefferson county, February 11-12.
Camden, Preble county, February 11-12.
Amanda, Fairfield county, February 13-14.
Cadiz, Harrison county, February 13-14.
Shandon, Butler county, February 13-14.
Troy, Miami county, February 15-16.
Cambridge, Guernsey county, February 15-16.
Franklin, Warren county, February 15-16.
Vandalia, Montgomery county, February 18-19.
Watertown, Washington county, February 18-19.
Harrison, Hamilton county, February 18-19.
Kingston, Ross county, February 18-19.
Degraff, Logan county, February 20-21.
Harrisonville, Scioto county, February 20-21.
Collinsville, Butler county, February 20-21.
Painesville, Lake county, February 21-22.
Richwood, Union county, February 22-23.
Frankfort, Ross county, February 22-23.
Bloomingburg, Fayette county, February 22-23.
South Charleston, Clark county, February 25-26.
Georgesville, Franklin county, February 25-26.
Loudonville, Ashland county, February 27-28.

Lecturers—Professors Lazenby, Kellerman, Hunt, of the Ohio State University; President W. O. Thompson, of Miami University; Professors Thorne, Green, Hickman, Selby, Webster, of the Ohio Agricultural Experiment Station; and Messrs. Agee, Begg, Brigham, Brown, Chamberlain, Derthick, Gould, Greene, Hurst, Kagy, Longenecker, McKelvey, Scott, Shawver, Shirer, Todd and Williams.

LIST OF FARMERS' INSTITUTES FOR 1895-96.

Grafton, Lorain county, December 2-3.
Greencastle, Fairfield county, December 2-3.
Caledonia, Marion county, December 2-3.
Labelle, Lawrence county, December 2-3.
Berlin Heights, Erie county, December 4-5.
Westerville, Franklin county, December 4-5.
Shelby, Richland county, December 4-5.
Centenary Church, Gallia county, December 4-5.
Richfield Center, Lucas county, December 6-7.
Delaware, Delaware county, December 6-7.
Loudonville, Ashland county, December 6-7.
Dyesville, Meigs county, December 6-7.
Wauseon, Fulton county, December 9-10.
Marysville, Union county, December 9-10.
Wooster, Wayne county, December 9-10.
Chester, Meigs county, December 9-10.
Cardington, Morrow county, December 9-10.
Defiance, Defiance county, December 11-12.
Marion, Marion county, December 11-12.
Navarre, Stark county, December 11-12.
Coolville, Athens county, December 11-12.
Centerburg, Knox county, December 11-12.
Columbus Grove, Putnam county, December 13-14.
Nevada, Wyandot county, December 13-14.
Lower Salem, Washington county, December 13-14.
Frazeysburg, Muskingum county, December 13-14.
Mt. Blanchard, Hancock county, December 16-17.
West Mansfield, Logan county, December 16-17.
Alliance, Stark county, December 16-17.
Chesterfield, Morgan county, December 16-17.
Upper Sandusky, Wyandot county, December 18-19.
Sidney, Shelby county, December 18-19.
Columbiana, Columbiana county, December 18-19.
Rehoboth, Perry county, December 18-19.
Republic, Seneca county, December 20-21.
Springfield, Clark county, December 20-21.
North Jackson, Mahoning county, December 20-21.
Thornville, Perry county, December 20-21.
Greenwich, Huron county, December 23-24.
Vienna, Trumbull county, December 23-24.
Chandlersville, Muskingum county, December 23-24.

Lucas, Richland county, December 25-26.
North Bloomfield, Trumbull county, December 25-26.
Plainfield, Coshocton county, December 25-26.
Polk, Ashland county, December 27-28.
Andover, Ashtabula county, December 27-28.
Killbuck, Holmes county, December 27-28.
Haverhill, Scioto county, December 30-31.
Cedarville, Greene county, December 30-31.
Jackson Center, Shelby county, December 30-31.
Bowling Green, Wood county, December 30-31.
Canfield, Mahoning county, December 30-31.
Harrisonville, Scioto county, January 1-2.
Catawba, Clark county, January 1-2.
Uniopolis, Auglaize county, January 1-2.
Florida, Henry county, January 1-2.
Edinburg, Portage county, January 1-2.
Piketon, Pike county, January 3-4.
Westville, Champaign county, January 3-4.
Beaver Dam, Allen county, January 3-4.
Hicksville, Defiance county, January 3-4.
North Springfield, Summit county, January 3-4.
North Liberty, Adams county, January 6-7.
Versailles, Darke county, January 6-7.
Bucyrus, Crawford county, January 6-7.
Maumee, Lucas county, January 6-7.
Brunswick, Medina county, January 6-7.
Russellville, Brown county, January 8-9.
Ft. Recovery, Mercer county, January 8-9.
Sunbury, Delaware county, January 8-9.
Leipsic, Putnam county, January 8-9.
Dover, Cuyahoga county, January 8-9.
Hamersville, Brown county, January 10-11.
Mendon, Mercer county, January 10-11.
Granville, Licking county, January 10-11.
Oakwood, Paulding county, January 10-11.
North Amherst, Lorain county, January 10-11.
Ashville, Pickaway county, January 13-14.
New Lisbon, Columbiana county, January 13-14.
Fremont, Sandusky county, January 13-14.
Antwerp, Paulding county, January 13-14.
Ashtabula, Ashtabula county, January 13-14.
Kingston, Ross county, January 15-16.
Carrollton, Carroll county, January 15-16.
Port Clinton, Ottawa county, January 15-16.
Montpelier, Williams county, January 15-16.

Painesville, Lake county, January 15-16.
New Plymouth, Vinton county, January 17-18.
Richmond, Jefferson county, January 17-18.
Sandusky, Erie county, January 17-18.
Bryan, Williams county, January 17-18.
Burton, Geauga county, January 17-18.
Utica, Licking county, January 17-18.
Caldwell, Noble county, January 20-21.
Cadiz, Harrison county, January 20-21.
Clyde, Sandusky county, January 20-21.
Delta, Fulton county, January 20-21.
Garrettsville, Portage county, January 20-21.
Woodsfield, Monroe county, January 22-23.
Colerain, Belmont county, January 22-23.
Tiffin, Seneca county, January 22-23.
Grand Rapids, Wood county, January 22-23.
Chagrin Falls, Cuyahoga county, January 22-23.
Barnesville, Belmont county, January 24-25.
Smithfield, Jefferson county, January 24-25.
New Washington, Crawford county, January 24-25.
Napoleon, Henry county, January 24-25.
Osborn Corners, Summit county, January 24-25.
Cambridge, Guernsey county, January 27-28.
Bellefontaine, Logan county, January 27-28.
Van Wert, Van Wert county, January 27-28.
Williamsport, Pickaway county, January 27-28.
Townsend Center, Huron county, January 27-28.
Gnadenhutten, Tuscarawas county, January 29-30.
Kings Creek, Champaign county, January 29-30.
Bluffton, Allen county, January 29-30.
Amanda, Fairfield county, January 29-30.
Whittlesey, Medina county, January 29-30.
Freeport, Harrison county, January 31-February 1.
Piqua, Miami county, January 31-February 1.
Benton Ridge, Hancock county, January 31-February 1.
Logan, Hocking county, January 31-February 1.
Shreve, Wayne county, January 31-February 1.
Keene, Coshocton county, February 3-4.
Greenville, Darke county, February 3-4.
Ada, Hardin county, February 3-4.
Athens, Athens county, February 3-4.
Richwood, Union county, February 3-4.
Millersburg, Holmes county, February 5-6.
Lewisburg, Preble county, February 5-6.
Ohio City, Van Wert county, February 5-6.

Watertown, Washington county, February 5-6.
Vandalia, Montgomery county, February 5-6.
Danville, Knox county, February 7-8.
Xenia, Greene county, February 7-8.
Buckland, Auglaize county, February 7-8.
Summerfield, Noble county, February 7-8.
Troy, Miami county, February 7-8.
Mt. Carmel, Clermont county, February 10-11.
London, Madison county, February 10-11.
Wilmington, Clinton county, February 12-13.
Georgesville, Franklin county, February 12-13.
Waynesville, Warren county, February 14-15.
Bloomingburg, Fayette county, February 14-15.
Miamisburg, Montgomery county, February 17-18.
Midland City, Clinton county, February 17-18.
Seven Mile, Butler county, February 19-20.
Hillsboro, Highland county, February 19-20.
Camden, Preble county, Feb. 21-22.
Frankfort, Ross county, February 21-22.
Harrison, Hamilton county, February 24-25.
Lebanon, Warren county, February 24-25.
Ross, Butler county, February 26-27.
Batavia, Clermont county, February 26-27.
Glendale, Hamilton county, February 28-29.
Rainsboro, Highland county, February 28-29.
New Philadelphia, Tuscarawas county, March 11-12.

Lecturers—Professors Lazenby, Kellerman, Hunt, Gibbs and Burkett, of the Ohio State University; Professors Thorne, Green, Hickman, Selby and Webster, of the Ohio Agricultural Experiment Station; and Messrs. Agee, Brigham, Begg, Brown, Chamberlain, Derthick, S. H. Ellis, E. C. Ellis, Elliott, Farnsworth, Foreman, Greene, Hood, Hurst, Lawrence, Laylin, Likens, Longenecker, McKelvey, Palm, Scott, Shawver, Todd, Williams and Wing.

During the season of 1895-96, one hundred and fifty-seven regular Farmers' Institutes were held under the auspices of The State Board of Agriculture, and eighty-seven counties took part in the work. But the Board had now reached that point where it was impossible, with the means at its command, to increase the number of Institutes, although the demand was constantly growing. Again the General Assembly came to its aid, and on the 27th of April, 1896, amended the "Act providing for the organization and support of farmers' institute societies," making the per capita allowance six mills instead of five mills, and dividing it equally between The State Board of Agriculture and the local societies, limiting the amount available in any county to two hundred and fifty dollars.

LIST OF FARMERS' INSTITUTES FOR 1896-97.

Clay Chapel, Gallia county, November 30-December 1.
Enon, Clark county, November 30-December 1.
Montpelier, Williams county, November 30-December 1.
Wilkesville, Vinton county, November 30-December 1.
Wooster, Wayne county, November 30-December 1.
Cable, Champaign county, December 2-3.
Chester, Meigs county, December 2-3.
Labelle, Lawrence county, December 2-3.
Loudonville, Ashland county, December 2-3.
Wauseon, Fulton county, December 2-3.
Coolville, Athens county, December 4-5.
Haverhill, Scioto county, December 4-5.
Lucas, Richland county, December 4-5.
Plain City, Madison county, December 4-5.
Sylvania, Lucas county, December 4-5.
Caledonia, Marion county, December 7-8.
Grove City, Franklin county, December 7-8.
Liberty Center, Henry county, December 7-8.
Lower Salem, Washington county, December 7-8.
Scioto, Scioto county, December 7-8.
Bloomingburg, Fayette county, December 9-10.
Bucyrus, Crawford county, December 9-10.
Defiance, Defiance county, December 9-10.
Piketon, Pike county, December 9-10.
Sarahsville, Noble county, December 9-10.
Antwerp, Paulding county, December 11-12.
Attica, Seneca county, December 11-12.
Kingston, Ross county, December 11-12.
Wilmington, Clinton county, December 11-12.
Woodsfield, Monroe county, December 11-12.
Barnesville, Belmont county, December 14-15.
Berlin Heights, Erie county, December 14-15.
Delaware, Delaware county, December 14-15.
Geneva, Ashtabula county, December 14-15.
Mt. Pleasant, Jefferson county, December 14-15.
Cadiz, Harrison county, December 16-17.
Cambridge, Guernsey county, December 16-17.
Painesville, Lake county, December 16-17.
Port Clinton, Ottawa county, December 16-17.
West Mansfield, Logan county, December 16-17.
Euclid, Cuyahoga county, December 18-19.

Fremont, Sandusky county, December 18-19.
Sidney, Shelby county, December 18-19.
Uhrichsville, Tuscarawas county, December 18-19.
White Cottage, Muskingum county, December 18-19.
Arcadia, Hancock county, December 21-22.
Dover, Cuyahoga county, December 21-22.
Keene, Coshocton county, December 21-22.
Kossuth, Auglaize county, December 21-22.
Thornville, Perry county, December 21-22.
Granville, Licking county, December 23-24.
Killbuck, Holmes county, December 23-24.
Kipton, Lorain county, December 23-24.
Leipsic, Putnam county, December 23-24.
Ohio City, Van Wert county, December 23-24.
Colerain, Belmont county, December 28-29.
Dyesville, Meigs county, December 28-29.
Idaho, Pike county, December 28-29.
Newtown, Hamilton county, December 28-29.
Waterville, Lucas county, December 28-29.
Athens, Athens county, December 30-31.
Freeport, Harrison county, December 30-31.
Grelton, Henry county, December 30-31.
Lebanon, Warren county, December 30-31.
Mt. Joy, Scioto county, December 30-31.
Beach City, Stark county, January 1-2.
Cherry Fork, Adams county, January 1-2.
New Plymouth, Vinton county, January 1-2.
Oakwood, Paulding county, January 1-2.
Hamersville, Brown county, January 4-5.
Hicksville, Defiance county, January 4-5.
Leetonia, Columbiana county, January 4-5.
Logan, Hocking county, January 4-5.
West Jefferson, Madison county, January 4-5.
Amanda, Fairfield county, January 6-7.
Batavia, Clermont county, January 6-7.
Bryan, Williams county, January 6-7.
Canal Winchester, Franklin county, January 6-7.
Canfield, Mahoning county, January 6-7.
Blanchester, Cilnton county, January 8-9.
Burghill, Trumbull county, January 8-9.
Delta, Fulton county, January 8-9.
New Holland, Pickaway county, January 8-9.
Sunbury, Delaware county, January 8-9.
Arcanum, Darke county, January 11-12.
Maumee, Lucas county, January 11-12.

Osborn Corners, Summit county, January 11-12.
Sandusky, Erie county, January 11-12.
Smithfield, Jefferson county, January 11-12.
Watertown, Washington county, January 11-12
Amesville, Athens county, January 13-14.
Bowling Green, Wood county, January 13-14.
Carrollton, Carroll county, January 13-14.
Monroeville, Huron county, January 13-14.
Poe, Medina county, January 13-14.
Troy, Miami county, January 13-14.
New Philadelphia, Tuscarawas county, January 15-16
Rehoboth, Perry county, January 15-16.
Savannah, Ashland county, January 15-16.
Tiffin, Seneca county, January 15-16.
Versailles, Darke county, January 15-16.
Xenia, Greene county, January 15-16.
Wakeman, Huron county, January 15-16.
Bellville, Richland county, January 18-19.
Ft. Recovery, Mercer county, January 18-19.
New Berlin, Stark county, January 18-19.
New Washington, Crawford county, January 18-19.
North Ridgeville, Lorain county, January 18-19.
Pleasantville, Fairfield county, January 18-19.
Brusnwick, Medina county, January 20-21.
Mt. Vernon, Knox county, January 20-21.
Nevada, Wyandot county, January 20-21.
North Springfield, Summit county, January 20-21
Rockford, Mercer county, January 20-21.
Tarlton, Pickaway county, January 20-21.
Frankfort, Ross county, January 22-23.
Greenwich, Huron county, January 22-23.
Marion, Marion county, January 22-23.
Van Wert, Van Wert county, January 22-23.
Warsaw, Coshocton county, January 22-23.
Windham, Portage county, January 22-23.
Bellefontaine, Logan county, January 25-26.
Chester Hill, Morgan county, January 25-26.
Grand Rapids, Wood county, January 25-26.
Greenspring, Seneca county, January 25-26.
Gustavus, Trumbull county, January 25-26.
Mt. Healthy, Hamilton county, January 25-26.
Bloomdale, Wood county, January 27-28.
Chandlersville, Muskingum county, January 27-28.
Collinsville, Butler county, January 27-28.
Holgate, Henry county, January 27-28.

Jefferson, Ashtabula county, January 27-28.
Westville, Champaign county, January 27-28.
Benton Ridge, Hancock county, January 29-30.
Continental, Putnam county, January 29-30.
Madison, Lake county, January 29-30.
Piqua, Miami county, January 29-30.
Quaker City, Guernsey county, January 29-30.
Vandalia, Montgomery county, January 29-30.
Beallsville, Monroe county, February 1-2.
Cedarville, Greene county, February 1-2.
Chardon, Geauga county, February 1-2.
Greenville, Darke county, February 1-2.
Harrod, Allen county, February 1-2.
Payne, Paulding county, February 1-2.
Chagrin Falls, Cuyahoga county, February 3-4.
Forest, Hardin county, February 3-4.
Lewisburg, Preble county, February 3-4.
Mechanicsburg, Champaign county, February 3-4.
Spencerville, Allen county, February 3-4.
Summerfield, Noble county, February 3-4.
Adamsville, Muskingum county, February 5-6.
Cardington, Morrow county, February 5-6.
Franklin, Warren county, February 5-6.
Mantua Station, Portage county, February 5-6.
Marysville, Union county, February 5-6.
Neptune, Mercer county, February 5-6.
Gnadenhutten, Tuscarawas county, February 8-9.
Hillsboro, Highland county, February 8-9.
Jersey, Licking county, February 8-9.
Richmond, Jefferson county, February 8-9.
Shandon, Butler county, February 8-9.
Uniopolis, Auglaize county, February 8-9.
Camden, Preble county, February 10-11.
Fredericktown, Knox county, February 10-11.
Jackson Center, Shelby county, February 10-11.
New Lisbon, Columbiana county, February 10-11.
Plainfield, Coshocton county, February 10-11.
Russellville, Brown county, February 10-11.
Adario, Richland county, February 12-13.
Degraff, Logan county, February 12-13.
Millersburg, Holmes county, February 12-13.
Mt. Carmel, Clermont county, February 12-13.
North Lima, Mahoning county, February 12-13.
Waynesville, Warren county, February 12-13.
Beaver Dam, Allen county, February 15-16.

Jamestown, Greene county, February 15-16.
Marlboro, Stark county, February 15-16.
Monroe, Butler county, February 15-16.
Shreve, Wayne county, February 15-16.
West Charleston, Miami county, February 15-16.
Ashville, Pickaway county, February 17-18.
Creston, Wayne county, February 17-18.
Girard, Trumbull county, February 17-18.
Miamisburg, Montgomery county, February 17-18.
Mt. Blanchard, Hancock county, February 17-18.
Pitchin, Clark county, February 17-18.
Andover, Ashtabula county, February 19-20.
Centerville, Montgomery county, February 19-20.
Chatham, Medina county, February 19-20.
Marengo, Morrow county, February 19-20.
Richwood, Union county, February 19-20.
Westerville, Franklin county, February 19-20.
Copopa, Lorain county, February 22-23.
Greencastle, Fairfield county, February 22-23.
New Waterford, Columbiana county, February 22-23.
Rainsboro, Highland county, February 22-23.
Sulphur Springs, Crawford county, February 22-23.
Upper Sandusky, Wyandot county, February 22-23.
Ada, Hardin county, February 24-25.
Milan, Erie county, February 24-25.
North Jackson, Mahoning county, February 24-25.
Utica, Licking county, February 24-25.
Vienna Cross Roads, Clark county, February 24-25.
Williamsburg, Clermont county, February 24-25.
Blue Ash, Hamilton county, February 26-27.
Clyde, Sandusky county, February 26-27.
Columbus Grove, Putnam county, February 26-27.
Danville, Knox county, February 26-27.
Edinburg, Portage county, February 26-27.
New Martinsburg, Fayette county, February 26-27.
Camba, Jackson county, March 17-18.

This year, for the first time in the history of the Institutes, all the counties in the state took part in the work.

Lecturers—Professors Lazenby, Kellerman, Hunt, Gibbs and Burkett, of the Ohio State University; Professors Thorne, Green, Hickman, Selby, and Webster, of the Ohio Agricultural Experiment Station; and Messrs. Begg, Brigham, Brown, Cowden, Derthick, S. H. Ellis, Elliott, Farnsworth, Foreman, Freeman, Greene, Hurst, Lawrence, Laylin, Longenecker, Lyon, McLaughlin, Roudebush, Scott, Shawver, Todd, Vine and Williams.

LIST OF FARMERS' INSTITUTES FOR 1897-98.

Bryan, Williams county, November 29-30.
Coolville, Athens county, November 29-30.
Geneva, Ashtabula county, November 29-30.
Hamersville, Brown county, November 29-30.
Lucas, Richland county, November 29-30.
Willoughby, Lake county, November 29-30.
Andover, Ashtabula county, December 1-2.
Defiance, Defiance county, December 1-2.
Dyesville, Meigs county, December 1-2.
Loudonville, Ashland county, December 1-2.
Mt. Carmel, Clermont county, December 1-2.
Strongsville, Cuyahoga county, December 1-2.
Girard, Trumbull county, December 3-4.
Killbuck, Holmes county, December 3-4.
New Plymouth, Vinton county, December 3-4.
Waynesville, Warren county, December 3-4.
Wellington, Lorain county, December 3-4.
Berlin Heights, Erie county, December 6-7.
Camba, Jackson county, December 6-7.
Continental, Putnam county, December 6-7.
Mantua Station, Portage county, December 6-7.
New Philadelphia, Tuscarawas county, December 6-7.
Bloomingburg, Fayette county, December 6-7.
Marlboro, Stark county, December 8-9.
Plainfield, Coshocton county, December 8-9.
Gypsum, Ottawa county, December 8-9.
Rockwood, Lawrence county, December 8-9.
South Charleston, Clark county, December 8-9.
Spencerville, Allen county, December 8-9.
Xenia, Greene county, December 10-11.
Chandlersville, Muskingum county, December 10-11.
Clipper Mills, Gallia county, December 10-11.
Fort Recovery, Mercer county, December 10-11.
Leetonia, Columbiana county, December 10-11.
Waterville, Lucas county, December 10-11.
Barlow, Washington county, December 13-14.
Greenville, Darke county, December 13-14.
Grove City, Franklin county, December 13-14.
Osborn Corners, Summit county, December 13-14.
Woodsfield, Monroe county, December 13-14.
Amesville, Athens county, December 15-16.

Ashville, Pickaway county, December 15-16.
Caldwell, Noble county, December 15-16.
Creston, Wayne county, December 15-16.
New Paris, Preble county, December 15-16.
Sunbury, Delaware county, December 15-16.
Cambridge, Guernsey county, December 17-18.
Carroll, Fairfield county, December 17-18.
Chatham, Medina county, December 17-18.
Chester, Meigs county, December 17-18.
Danville, Knox county, December 17-18.
Sevenmile, Butler county, December 17-18.
Barnesville, Belmont county, December 20-21.
Cleves, Hamilton county, December 20-21.
North Fairfield, Huron county, December 20-21.
Rehoboth, Perry county, December 20-21.
Rio Grande, Gallia county, December 20-21.
Shreve, Wayne county, December 20-21.
Adario, Richland county, December 22-23.
Blueash, Hamilton county, December 22-23.
Canal Fulton, Stark county, December 22-23.
Colerain, Belmont county, December 22-23.
Logan, Hocking county, December 22-23.
Wilkesville, Vinton county, December 22-23.
Athens, Athens county, December 27-28.
Canfield, Mahoning county, December 27-28.
Freeport, Harrison county, December 27-28.
Idaho, Pike county, December 27-28.
Mt. Blanchard, Hancock county, December 27-28.
West Charleston, Miami county, December 27-28.
Beaverdam, Allen county, December 29-30.
Chesterhill, Morgan county, December 29-30.
Hartford, Trumbull county, December 29-30.
Kings Creek, Champaign county, December 29-30.
Mt. Pleasant, Jefferson county, December 29-30.
Rainsboro, Highland county, December 29-30.
Buckland, Auglaize county, December 31-January 1.
Jefferson, Ashtabula county, December 31-January 1.
Richmond, Jefferson county, December 31-January 1.
Russellville, Brown county, December 31-January 1.
Watertown, Washington county, December 31-January 1.
West Mansfield, Logan county, December 31-January 1.
Blanchester, Clinton county, January 3-4.
Carrollton, Carroll county, Jaunary 3-4.
Lisbon, Columbiana county, January 3-4.
Marion, Marion county, January 3-4.

Painesville, Lake county, January 3-4.
Rockford, Mercer county, January 3-4.
Alliance, Stark county, January 5-6.
Chagrin Falls, Cuyahoga county, January 5-6.
Galion, Crawford county, January 5-6.
New Martinsburg, Fayette county, January 5-6.
North Springfield, Summit county, January 5-6.
Van Wert, Van Wert county, January 5-6.
Antwerp, Paulding county, January 7-8.
Edinburg, Portage county, January 7-8.
Marengo, Morrow county, January 7-8.
Mineralpoint, Tuscarawas county, January 7-8.
New Holland, Pickaway county, January 7-8.
North Ridgeville, Lorain county, January 7-8.
Kingston, Ross county, January 14-15.
Groveport, Franklin county, January 17-18.
McClure, Henry county, January 17-18.
Mulberry, Clermont county, January 17-18.
North Lima, Mahoning county, January 17-18.
Piketon, Pike county, January 17-18.
Castalia, Erie county, January 17-18.
Upper Sandusky, Wyandot county, January 17-18.
Ada, Hardin county, January 19-20.
Clyde, Sandusky county, January 19-20.
McComb, Hancock county, January 19-20.
Newton Falls, Trumbull county, January 19-20.
Pleasantville, Fairfield county, January 19-20.
Ross, Butler county, January 19-20.
Scioto, Scioto county, January 19-20.
Bloomdale, Wood county, January 21-22.
Columbus Grove, Putnam county, January 21-22.
Franklin, Warren county, January 21-22.
Garrettsville, Portage county, January 21-22.
Granville, Licking county, January 21-22.
Haverhill, Scioto county, January 21-22.
Tiffin, Seneca county, January 21-22.
Deshler, Henry county, January 21-22.
Cedarville, Greene county, January 24-25.
Copopa, Lorain county, January 24-25.
Lee, Athens county, January 24-25.
Mt. Vernon, Knox county, January 24-25.
Sylvania, Lucas county, January 24-25.
Versailles, Darke county, January 24-25.
Wabash, Mercer county, January 24-25.
Jackson Center, Shelby county, January 26-27.

Lexington, Richland county, January 26-27.
London, Madison county, January 26-27.
New London, Huron county, January 26-27.
Ohio City, Van Wert county, January 26-27.
Sayre, Perry county, January 26-27.
Wauseon, Fulton county, January 26-27.
Bellefontaine, Logan county, January 28-29.
Fultonham, Muskingum county, January 28-29.
Kossuth, Auglaize county, January 28-29.
Montpelier, Williams county, January 28-29.
New Carlisle, Clark county, January 28-29.
New Washington, Crawford county, January 28-29.
Polk, Ashland county, January 28-29.
Caledonia, Marion county, January 31-February 1.
Hicksville, Defiance county, January 31-February 1.
Jersey, Licking county, January 31-February 1.
Mt. Joy, Scioto county, January 31-February 1.
Summerfield, Noble county, January 31-February 1
Wooster, Wayne county, January 31-February 1.
Beallsville, Monroe county, February 2-3.
Cherryfork, Adams county, February 2-3.
Delaware, Delaware county, February 2-3.
Millersburg, Holmes county, February 2-3.
Payne, Paulding county, February 2-3.
Plain City, Madison county, February 2-3.
Keene, Coshocton county, February 4-5.
Marysville, Union county, February 4-5.
Mowrystown, Highland county, February 4-5.
Oakwood, Paulding county, February 4-5.
Quaker City, Guernsey county, February 4-5.
Westerville, Franklin county, February 4-5.
Bethel, Clermont county, February 7-8.
Bloomville, Seneca county, February 7-8.
Catawba, Clark county, February 7-8.
Dresden, Muskingum county, February 7-8.
Leipsic, Putnam county, February 7-8.
Smithfield, Jefferson county, February 7-8.
Arcadia, Hancock county, February 9-10.
Brownsville, Licking county, February 9-10.
Bucyrus, Crawford county, February 9-10.
Cadiz, Harrison county, February 9-10.
Covington, Miami county, February 9-10.
Newtown, Hamilton county, February 9-10.
Arcanum, Darke county, February 11-12.
Bowling Green, Wood county, February 11-12.

Gnadenhutten, Tuscarawas county, February 11-12.
Iberia, Morrow county, February 11-12.
Monroe, Butler county, February 11-12.
Thornville, Perry county, February 11-12.
Amanda, Fairfield county, February 14-15.
Nevada, Wyandot county, February 14-15.
New Concord, Muskingum county, February 14-15.
New Waterford, Columbiana county, February 14-15.
Oakharbor, Ottawa county, February 14-15.
Vandalia, Montgomery county, February 14-15.
Enon, Clark county, February 16-17.
Forest, Hardin county, February 16-17.
Fremont, Sandusky county, February 16-17.
Laurelville, Hocking county, February 16-17.
North Jackson, Mahoning county, February 16-17.
Warsaw, Coshocton county, February 16-17.
Benton Ridge, Hancock county, February 18-19.
Centerburg, Knox county, February 18-19.
Frankfort, Ross county, February 18-19.
Kinsman, Trumbull county, February 18-19.
Milan, Erie county, February 18-19.
Westville, Champaign county, February 18-19.
Burton, Geauga county, February 21-22.
Centerville, Montgomery county, February 21-22.
Convoy, Van Wert county, February 21-22.
Greenspring, Seneca county, February 21-22.
Piqua, Miami county, February 21-22.
Uitca, Licking county, February 21-22.
Butler, Richland county, February 23-24.
East Townsend, Huron county, February 23-24.
Euclid, Cuyahoga county, February 23-24.
Harrod, Allen county, February 23-24.
Lebanon, Warren county, February 23-24.
Sidney, Shelby county, February 23-24.
Brunswick, Medina county, February 25-26.
Cridersville, Auglaize county, February 25-26.
Degraff, Logan county, February 25-26.
Dover, Cuyahoga county, February 25-26.
Lattasburg, Wayne county, February 25-26.
Mt. Healthy, Hamilton county, February 25-26.
Amelia, Clermont county, February 28-March 1.
Germantown, Montgomery county, February 28-March 1.
Jamestown, Greene county, February 28-March 1.
Mingo, Champaign county, February 28-March 1.
Randolph, Portage county, February 28-March 1.

Ridgeville Corners, Henry county, February 28-March 1.
Camden, Preble county, March 2-3.
Grand Rapids, Wood county, March 2-3.
New Berlin, Stark county, March 2-3.
Richwood, Union county, March 2-3.
Union Plains, Brown county, March 2-3.
Wilmington, Clinton county, March 2-3.
Delta, Fulton county, March 4-5.
Hillsboro, Highland county, March 4-5.
Oxford, Butler county, March 4-5.
Seville, Medina county, March 4-5.
Tarlton, Pickaway county, March 4-5.
Waldo, Marion county, March 4-5.

Lecturers—Professors Lazenby, Kellerman, Gibbs, White, and Burkett, of the Ohio State University; Professors Thorne, Green, Hickman, Selby and Webster, of the Ohio Agricultural Experiment Station; and Messrs. Begg, Bradfute, B. H. Brown, Cowden, Derthick, Dobie, Elliott, S. H. Ellis, Farnsworth, Freeman, Gould, Greene, Housekeeper, Laylin, Longenecker, McLaughlin, McNeal, Miller, Morris, Roudebush, Scott, Shawver, M. I. Todd, S. H. Todd, White, Williams and Wing.

LIST OF FARMERS' INSTITUTES FOR 1898-99.

Convoy, Van Wert county, November 28-29.
Mantua Station, Portage county, November 28-29.
Marietta, Washington county, November 28-29.
Pomaria, Lawrence county, November 28-29.
Sunbury, Delaware county, November 28-29.
Winfield, Tuscarawas county, November 28-29.
Coolville, Athens county, November 30-December 1.
Granville, Licking county, November 30-December 1.
Haverhill, Scioto county, November 30-December 1.
Newton Falls, Trumbull county, November 30-December 1.
Plainfield, Coshocton county, November 30-December 1.
Spencerville, Allen county, November 30-December 1.
Adamsville, Muskingum county, December 2-3.
Alliance, Stark county, December 2-3.
Bluffton, Allen county, December 2-3.
Dyesville, Meigs county, December 2-3.
Killbuck, Holmes county, December 2-3.
Thurman, Gallia county, December 2-3.

Arcadia, Hancock county, December 5-6.
Cambridge, Guernsey county, December 5-6.
Lisbon, Columbiana county, December 5-6.
Loudonville, Ashland county, December 5-6.
Mt. Joy, Scioto county, December 5-6.
Woodsfield, Monroe county, December 5-6.
Bucyrus, Crawford county, December 7-8.
Caldwell, Noble county, December 7-8.
Cherryfork, Adams county, December 7-8.
Colerain, Belmont county, December 7-8.
North Lima, Mahoning county, December 7-8.
Republic, Seneca county, December 7-8.
Chandlersville, Muskingum county, December 9-10.
Hamersville, Brown county, December 9-10.
Marion, Marion county, December 9-10.
Mecca, Trumbull county, December 9-10.
New London, Huron county, December 9-10.
Smithfield, Jefferson county, December 9-10.
Amelia, Clermont county, December 12-13.
Andover, Ashtabula county, December 12-13.
Delaware, Delaware county, December 12-13.
Ft. Recovery, Mercer county, December 12-13.
Java, Lucas county, December 12-13.
Triadelphia, Morgan county, December 12-13.
Amesville, Athens county, December 14-15.
Greenville, Darke county, December 14-15.
Iberia, Morrow county, December 14-15.
Madison, Lake county, December 14-15.
Newtown, Hamilton county, December 14-15.
Wauseon, Fulton county, December 14-15.
Bryan, Williams county, December 16-17.
Dover, Cuyahoga county, December 16-17.
Lexington, Richland county, December 16-17.
New Paris, Preble county, December 16-17.
Rehoboth, Perry county, December 16-17.
Waynesville, Warren county, December 16-17.
Amanda, Fairfield county, December 19-20.
Brownhelm, Lorain county, December 19-20.
Covington, Miami county, December 19-20.
Hicksville, Defiance county, December 19-20.
Nevada, Wyandot county, December 19-20.
Whittlesey, Medina county, December 19-20.
Xenia, Greene county, December 19-20.
Creston, Wayne county, December 21-22.
Kingston, Ross county, December 21-22.

Florida, Henry county, December 21-22.
Pitchin, Clark county, December 21-22.
Sulphur Springs, Crawford county, December 21-22.
Wakeman, Huron county, December 21-22.
Westville, Champaign county, December 21-22.
Bellefontaine, Logan county, December 23-24.
Continental, Putnam county, December 23-24.
London, Madison county, December 23-24.
Milan, Erie county, December 23-24.
New Martinsburg, Fayette county, December 23-24.
North Springfield, Summit county, December 23-24.
Savannah, Ashland county, December 23-24.
Bowling Green, Wood county, December 26-27.
Canal Winchester, Franklin county, December 26-27.
Canfield, Mahoning county, December 26-27.
Idaho, Pike county, December 26-27.
Sabina, Clinton county, December 26-27.
Sidney, Shelby county, December 26-27.
Bloomingburg, Fayette county, December 28-29.
Centerburg, Knox county, December 28-29.
Jackson, Jackson county, December 28-29.
McComb, Hancock county, December 28-29.
New Waterford, Columbiana county, December 28-29.
West Carrollton, Montgomery county, December 28-29.
Ashville, Pickaway county, December 30-31.
Greenspring, Seneca county, December 30-31.
Albany, Athens county, December 30-31.
Monroe, Butler county, December 30-31.
New Berlin, Stark county, December 30-31.
Ohio City, Van Wert county, December 30-31.
Utica, Licking county, December 30-31.
Antwerp, Paulding county, January 2-3.
Carrollton, Carroll county, January 2-3.
Fremont, Sandusky county, January 2-3.
Lattasburg, Wayne county, January 2-3.
Mt. Healthy, Hamilton county, January 2-3.
West Mansfield, Logan county, January 2-3.
Ada, Hardin county, January 4-5.
Defiance, Defiance county, January 4-5.
Mulberry, Clermont county, January 4-5.
Oakharbor, Ottawa county, January 4-5.
Poe, Medina county, January 4-5.
Port Washington, Tuscarawas county, January 4-5.
Antrim, Guernsey county, January 6-7.
Deshler, Henry county, January 6-7.

Mowrystown, Highland county, January 6-7.
Osborn Corners, Summit county, January 6-7.
Upper Sandusky, Wyandot county, January 6-7.
Waterville, Lucas county, January 6-7.
Pleasant Corners, Franklin county, January 13-14.
Burlington, Lawrence county, January 16-17.
Castalia, Erie county, January 16-17.
Geneva, Ashtabula county, January 16-17.
North Jackson, Mahoning county, January 16-17.
Pleasantville, Fairfield county, January 16-17.
Reily, Butler county, January 16-17.
West Jefferson, Madison county, January 16-17.
Camden, Preble county, January 18-19.
Chardon, Geauga county, January 18-19.
Clyde, Sandusky county, January 18-19.
Fultonham, Muskingum county, January 18-19.
Scioto, Scioto county, January 18-19.
South Charleston, Clark county, January 18-19.
Vienna, Trumbull county, January 18-19.
Chagrin Falls, Cuyahoga county, January 20-21.
Germantown, Montgomery county, January 20-21.
Jamestown, Greene county, January 20-21.
Piketon, Pike county, January 20-21.
Sayre, Perry county, January 20-21.
Tiffin, Seneca county, January 20-21.
Windham, Portage county, January 20-21.
Camba, Jackson county, January 23-24.
Freeport, Harrison county, January 23-24.
Peebles, Adams county, January 23-24.
Strongsville, Cuyahoga county, January 23-24.
Sylvania, Lucas county, January 23-24.
Vandalia, Montgomery county, January 23-24.
Wooster, Wayne county, January 23-24.
Addison, Gallia county, January 25-26.
Arcanum, Darke county, January 25-26.
Belmont, Belmont county, January 25-26.
Decatur, Brown county, January 25-26.
Delta, Fulton county, January 25-26.
Holmesville, Holmes county, January 25-26.
North Ridgeville, Lorain county, January 25-26.
Beallsville, Monroe county, January 27-28.
Bethel, Clermont county, January 27-28.
Chester, Meigs county, January 27-28.
Monroeville, Huron county, January 27-28.
Montpelier, Williams county, January 27-28.

New Guilford, Coshocton county, January 27-28.
Versailles, Darke county, January 27-28.
Ashtabula, Ashtabula county, January 30-31.
Berlin Center, Mahoning county, January 30-31.
Brownsville, Licking county, January 30-31.
Cleves, Hamilton county, January 30-31.
Jackson Center, Shelby county, January 30-31.
Lucas, Richland county, January 30-31.
Payne, Paulding county, January 30-31.
Blueash, Hamilton county, February 1-2.
Bolivar, Tuscarawas county, February 1-2.
Carroll, Fairfield county, February 1-2.
Degraff, Logan county, February 1-2.
Galion, Crawford county, February 1-2.
Malinta, Henry county, February 1-2.
Painesville, Lake county, February 1-2.
Euclid, Cuyahoga county, February 3-4.
Ottawa, Putnam county, February 3-4.
Oxford, Butler county, February 3-4.
Richmond, Jefferson county, February 3-4.
Sparta, Morrow county, February 3-4.
Tarlton, Pickaway county, February 3-4.
Tremont City, Clark county, February 3-4.
Beaverdam, Allen county, February 6-7.
Cadiz, Harrison county, February 6-7.
Copopa, Lorain county, February 6-7.
Franklin, Warren county, February 6-7.
Marysville, Union county, February 6-7.
Waldo, Marion county, February 6-7.
Kossuth, Auglaize county, February 8-9.
Malletcreek, Medina county, February 8-9.
Mechanicsburg, Champaign county, February 8-9.
Mt. Pleasant, Jefferson county, February 8-9.
Trotwood, Montgomery county, February 8-9.
Westerville, Franklin county, February 8-9.
Barnesville, Belmont county, February 10-11.
Inland, Summit county, February 10-11.
Jersey, Licking county, February 10-11.
Lewisburg, Preble county, February 10-11.
Piqua, Miami county, February 10-11.
Wabash, Mercer county, February 10-11.
Berlin Heights, Erie county, February 13-14.
Cedarville, Greene county, February 13-14.
Frankfort, Ross county, February 13-14.
New Plymouth, Vinton county, February 13-14.

Prairie Depot, Wood county, February 13-14.
Randolph, Portage county, February 13-14.
Columbiana, Columbiana county, February 15-16.
Gypsum, Ottawa county, February 15-16.
Hillsboro, Highland county, February 15-16.
Laurelville, Hocking county, February 15-16.
Mt. Blanchard, Hancock county, February 15-16.
Vienna Crossroads, Clark county, February 15-16.
Beach City, Stark county, February 17-18.
Harrod, Allen county, February 17-18.
West Charleston, Miami county, February 17-18.
Maumee, Lucas county, February 17-18.
North Lewisburg, Champaign county, February 17-18.
Williamsburg, Clermont county, February 17-18.
Williamsport, Pickaway county, February 17-18.
Adario, Richland county, February 20-21.
Goodhope, Fayette county, February 20-21.
Grand Rapids, Wood county, February 20-21.
New Philadelphia, Tuscarawas county, February 20-21.
Summerfield, Noble county, February 20-21.
Watertown, Washington county, February 20-21.
Caledonia, Marion county, February 22-23.
Chesterhill, Morgan county, February 22-23.
Keene, Coshocton county, February 22-23.
Leipsic, Putnam county, February 22-23.
Norwich, Muskingum county, February 22-23.
Rainsboro, Highland county, February 22-23.
Danville, Knox county, February 24-25.
Logan, Hocking county, February 24-25.
Mt. Perry, Perry county, February 24-25.
Oakwood, Paulding county, February 24-25.
Richwood, Union county, February 24-25.
Union Plains, Brown county, February 24-25.
Athens, Athens county, February 27-28.
Bloomdale, Wood county, February 27-28.
Cridersville, Auglaize county, February 27-28.
Marlboro, Stark county, February 27-28.
Shreve, Wayne county, February 27-28.
Van Wert, Van Wert county, February 27-28.
Wilmington, Clinton county, February 27-28.
Benton Ridge, Hancock county, March 1-2.
Butler, Richland county, March 1-2.
Edinburg, Portage county, March 1-2.
Lebanon, Warren county, March 1-2.
Mendon, Mercer county, March 1-2.

Wilkesville, Vinton county, March 1-2.
Collinsville, Butler county, March 3-4.
Cortland, Trumbull county, March 3-4.
Forest, Hardin county, March 3-4.
Fredericktown, Knox county, March 3-4.
Racine, Meigs county, March 3-4.
Uniopolis, Auglaize county, March 3-4.

Lecturers—Professors Lazenby, Kellerman, Gibbs and White, of the Ohio State University; Professors Thorne, Green, Hickman, Selby and Webster, of the Ohio Agricultural Experiment Station; and Messrs. Begg, Bradfute, Cowden, Derthick, Dobie, Farnsworth, Freeman, Gould, Greene, Houlette, Housekeeper, Lawrence, Laylin, Lehman, McLaughlin, H. P. Miller, T. J. Miller, Roudebush, Scott, Shawver, Shirer, M. I. Todd, S. H. Todd, Trumbo, Turner, Wallace, White, Williams and Wing.

In 1890-91, there were one hundred and twenty-four institutes held under the auspices of the Board; in 1891-92, one hundred and forty-one; in 1892-93, one hundred and fifty-one; in 1893-94, one hundred and fifty; in 1894-95, one hundred and fifty-one; in 1895-96, one hundred and fifty-seven; in 1896-97, two hundred and twelve; in 1897-98, two hundred and thirty-four; and in 1898-99, two hundred and fifty were held.

In addition to the regular farmers' institutes held under the auspices of The State Board of Agriculture, a large number of independent institutes have been held each year, some of which reported to this Department, but many failed to do so, hence we are unable to give even an approximate estimate of the number of independent meetings held. In 1890-91 there were no reports made; in 1891-92, eight reported; in 1892-93, fourteen; in 1893-94, fourteen; in 1894-95, twenty-seven; in 1895-96, thirty-one; in 1896-97, twenty-five; in 1897-98, twenty-nine; and in 1898-99, twenty reported.

The *State Farmers' Institute* held its first session in Columbus, Tuesday, January 11, 1887 (the annual meeting of The State Board of Agriculture was held on the 12th) and it has held annual two-day sessions in Columbus since that time during the week of the annual meeting of The State Board of Agriculture. These institutes have always been well attended by the farmers, horticulturists and stock breeders of the State. During the continuance of the last two State Institutes (1898 and 1899) no county institutes were held, thus giving all interested an opportunity of attending, and they proved the most successful ever held, both in point of numbers and interest. Nearly all the institute lecturers in the employ of the Board attended these State meetings and added materially to their interest and value.

Since the inauguration of farmers' institutes in 1880-81, The State Board of Agriculture has received the hearty co-operation and valuable assistance of the Professors of the Ohio State University, and the officers of the Ohio Agricultural Experiment Station, and the help thus given has been a great aid in making the work a success. The Board has also received the assistance of prominent educators throughout the State and from sister States; of men who are authorities in their special lines of work—agriculture, horticulture, stock breeding, etc.; of intelligent, earnest, practical farmers, and all these gentlemen deserve a share of the credit of success. Yet the Board feels that in giving credit to whom credit is due, the generals who planned the campaigns should not be forgotten, for it has really been through the faithful work of our efficient Secretaries that the success of Farmers' Institutes in Ohio has been made possible.

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